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COMPUTERWORLD

Industry shifts erode customer dependence

IBM SOFTWARE GIANT IN TRANSITION

Part 1 of a three-part series researched and written by Computerworld*'s Rosemary Hamilton, Johanna Ambrosio, Patricia Keefe and Kim S. Nash*

IBM raked in nearly $10 billion in worldwide software sales last year. That means its software business alone was nearly as big as the second largest U.S. computer maker and six times the size of the largest independent software vendor.

Yet IBM's recent performance in the software business has been a mixed bag, and its future holds both promise and uncertainty.

The company that was once the compelling force in software is now trying to redefine its role in an information systems world in which customer requirements have become too complex and computing platforms too numerous for one company to reign supreme any longer.

"Five or six years ago, when [IBM] did something or said they were going to, it froze a lot of people. Not anymore," said Roger Bast, director of MIS at Air Products and Chemicals, Inc.'s gases group in Allentown, Pa. "IBM's an important supplier, but they don't call the shots."

Since the mid-1980s, IBM has been refocusing and diversifying its software business to adjust to these changes. It has had high-profile successes and mistakes. For example, it rules

Continued on page 8

Pan Am's IS chief opts for land route

BY RICHARD PASTORE
CW STAFF

NEW YORK — Robert O. Wagner recently said his toughest job has been motivating his information systems employees to stick with Pan American World Airways through the trials of Chapter 11 bankruptcy protection. But the temptation to leave proved to be too strong for Wagner. Last week, it was announced that he will leave his post as vice president of IS and move to Consolidated Rail Corp.

Wagner, 54, will start June 1 as vice president of IS at the Philadelphia-based rail freight company. There he will report to David Levan, who oversees corporate strategies, administrative

Continued on page 111

Jochen Stein

Wagner leaves *Pan Am to join Consolidated Rail*

NEWSPAPER

Massive merger task begins

Users expecting AT&T to buy into strategic directions set by NCR

BY MICHAEL FITZGERALD
CW STAFF

NEW YORK — AT&T placed a $7.4 billion bet last week that NCR Corp. will erase AT&T's years of frustration in the computer market — along with an estimated $2 billion in losses over six years.

AT&T is gambling that a transition team of top executives from both sides will make this merger different from those that preceded it (notably the union of Burroughs Corp. and Sperry Corp. into Unisys Corp. and Hewlett-Packard Co.'s swallowing of Apollo Computer, Inc.), which have met with more misfortune than success.

"It's going to take a major effort to make this one work," said Robert Kidd, an analyst at Dataquest, Inc. "If it does work, they will represent a considerable competitor [in the marketplace]." The companies would proceed as rapidly as possible to consolidate AT&T's computer operations into NCR in advance of the legal consummation of the merger, which could take several months, NCR Chairman Charles E. Exley Jr. said in a statement Friday.

Users of both companies' computers reacted to the merger with little concern, perhaps because they have had nearly six

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At a glance

AT&T

1990 revenue: **$37.3B**
1990 profits: **$2.7B**
Employees: **273,000**

AT&T computer operations

1990 revenue: **$2B***
Employees: **8,200**

*Estimated by Northern Business Info/Datapro. Loss figures not available

NCR

1990 revenue: **$6.29B**
1990 profits: **$369M**
Employees: **55,000**

CW Chart: Tom Monahan

Global goals of technological convergence hinge on unproven 'open vision' and critical mass

ANALYSIS

BY MICHAEL FITZGERALD
CW STAFF

What AT&T Chairman Robert E. Allen wants is a global, enterprisewide company that is equally adept at computing and telecommunications. What he has is a company that has yet to realize its ambitions, let alone his vision of the future.

Conventional wisdom holds that Allen's acquisitiveness hinged on NCR Corp.'s Open, Cooperative Computing Architecture strategy, based on open systems and standards. That is hogwash, one analyst said.

"This isn't about technology; it's about critical mass, scope and scale, internationalization — that's what [AT&T's] getting," said Robert Kidd, an analyst at market research firm Dataquest, Inc. in San Jose, Calif.

That point was affirmed by Bill O'Shea, AT&T Computer Systems Division's vice president of systems development and marketing. "We desire to become a more global company; we see a tremendous need for data networking and a convergence of the technology foundation for computing and communications," he said.

In London, Robert Baird, vice chairman of the NCR Users Association, said the merger should work "very well as long as AT&T does not try to turn NCR into the AT&T computer division."

Claiming that AT&T's Computer Systems Division had been on the right track, O'Shea indicated the problem was that it was just not large enough to

Continued on page 113

FCC opens local access doors

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — The Federal Communications Commission struck a blow against the last bastion of monopoly power in the 100-year-old Bell telephone system last week. By a vote of 5-to-0, the FCC proposed allowing independent telephone companies to connect with the networks of local Bell companies through the local companies' central offices.

That will give users communications alternatives that are not now available on a cost-effective basis. For example, a firm will be able to send data from its headquarters to its branch offices over the fiber-optic network of one of the new private telephone companies, routing it through the local Bell company's central office. Currently, users have to pay for both the private fiber lines and the parallel traditional telephone lines.

"Competition [at the local level] is the best thing that could happen to us," said Augie Blegen, executive director of the Association of Data Communications Users, Inc. "I can't see anything that is not positive in this."

The idea, while endorsed by business users who said increased competition will lead to lower prices, better service and greater innovation, was opposed by the Bell companies. "The

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Businessland losses expected to be severe, clouding the future viability of the once high-flying PC retail chain. Page 111.

In their own words: Gates and McNealy detail their respective definitions of what really makes up 'open systems.' Page 21.

Tandy grabs for multimedia brass ring with jazzed-up PC line featuring CD-ROM and stereo sound. Page 6.

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7 **DEC** takes another stab at the high-end PC market in an attempt to stem the tide of DEC users crossing over to **IBM** for their PCs.

10 For the first time, a suit filed by the **Software Publishers Association** has been dropped for lack of merit.

14 IS managers responsible for keeping their shops secure will now have extra help: **National Security Associates** will officially kick off an on-line service dedicated solely to computer security.

111 A reported 120 research employees at **Wang** received pink slips last week; the company says the cutbacks are part of an ongoing plan to improve the company's bottom line.

112 Will the **AT&T/NCR** merger be good or bad for the companies' users? Most observers aren't worried — provided AT&T doesn't mess with NCR's successful product lines.

Quotable

> "*At some point, we'll all have a computer on our desk and a phone in our shoe, but who will pay for it?"*
>
> SHERRIE P. MARSHALL
> FCC
>
> *On the future of telecommunications. See story page 55.*

SYSTEMS & SOFTWARE

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The 5th Wave

"WE'RE USING A FOUR-TIERED SYSTEM—PC TO MINI TO MR. SMOOTHY TO MAINFRAME."

EXECUTIVE BRIEFING

■ **IBM is no longer the only software game in town,** and the industry leader is struggling with the transition from being the dominant player in the computer industry to becoming one of many. Although some segments such as DB2 have been hugely successful, more recent directions, including Officevision and AD/Cycle, have had mixed market and technical results. IBM says its software business is meeting growth goals, but customers say they are increasingly basing software decisions on product quality rather than account control. The first of a three-part *Computerworld* series. **Pages 1 and 8.**

■ **Pan Am's top IS executive departs** to hop on board at Conrail. Robert O. Wagner, vice president of information services, follows the lead of many other IS employees who have left Pan Am since its filing for Chapter 11 bankruptcy protection. Wagner will likely be replaced by an internal candidate. **Page 1.**

■ **The Software Publishers Association** withdraws a piracy lawsuit for the first time. Employees at Snap-on Tools convinced the SPA that they had valid ownership of software from Lotus, Ashton-Tate, Wordperfect and Microsoft. **Page 10.**

■ **AT&T and NCR users say the $7.4 billion merger can work** — if AT&T leaves well enough alone. Although AT&T says it will preserve NCR's recently announced product strategy, some users still want more information about how the combination will fit. **Pages 1, 112, 113.**

■ **The threat of outsourcing is forcing many data centers** to adopt performance-boosting tactics including consolidation, automation, facilities sharing and relocation. **Page 71.**

■ **Wang reportedly lays off 120 more employees,** although the company refuses to confirm the figure. Meanwhile, the next installment of Wang's Office 2000 strategy has been delayed until next month. **Page 111.**

■ **IBM slashes prices on the RS/6000,** but the real cost difference to customers may be minimal. One analyst calls the cuts little more than "IBM going public with its discount schedule." **Page 4.**

■ **DEC users can expect a tenfold price/performance increase** in VAX/VMS products by 1993, a DEC vice president tells Decus members. **Page 14.**

■ **Office ergonomic issues are increasingly important** to IS managers. But the sudden awareness is spawning a marketplace of instant ergonomic "experts" and products. Managers should be wary. **Page 63.**

■ **Insurance IS chiefs are under pressure** to assess the business value of technology, but no one ultimate measure exists. Instead, they've had to mix and match business measures with IS gauges. **Page 81.**

■ **IS career opportunities in retail** aren't sizzling, but there are a few bright spots at mail-order firms, retail suppliers and prescription drug companies. **Page 97.**

■ **Users trying to dispose of an older minicomputer** or midrange machine may be surprised by the degree of effort involved and disappointed by the prices they receive. **Page 104.**

■ **On-site this week:** The tie that binds scattered DEC VAXs at Chaparral Steel in Midlothian, Texas, is Suitetalk, a message bus for client/server computing from Suite Software. **Page 29.** A Bull DPS 6 Plus minicomputer speeds processing of vocational rehabilitation services needs at Kentucky's Department of Vocational Rehabilitation in Frankfort. **Page 29.**

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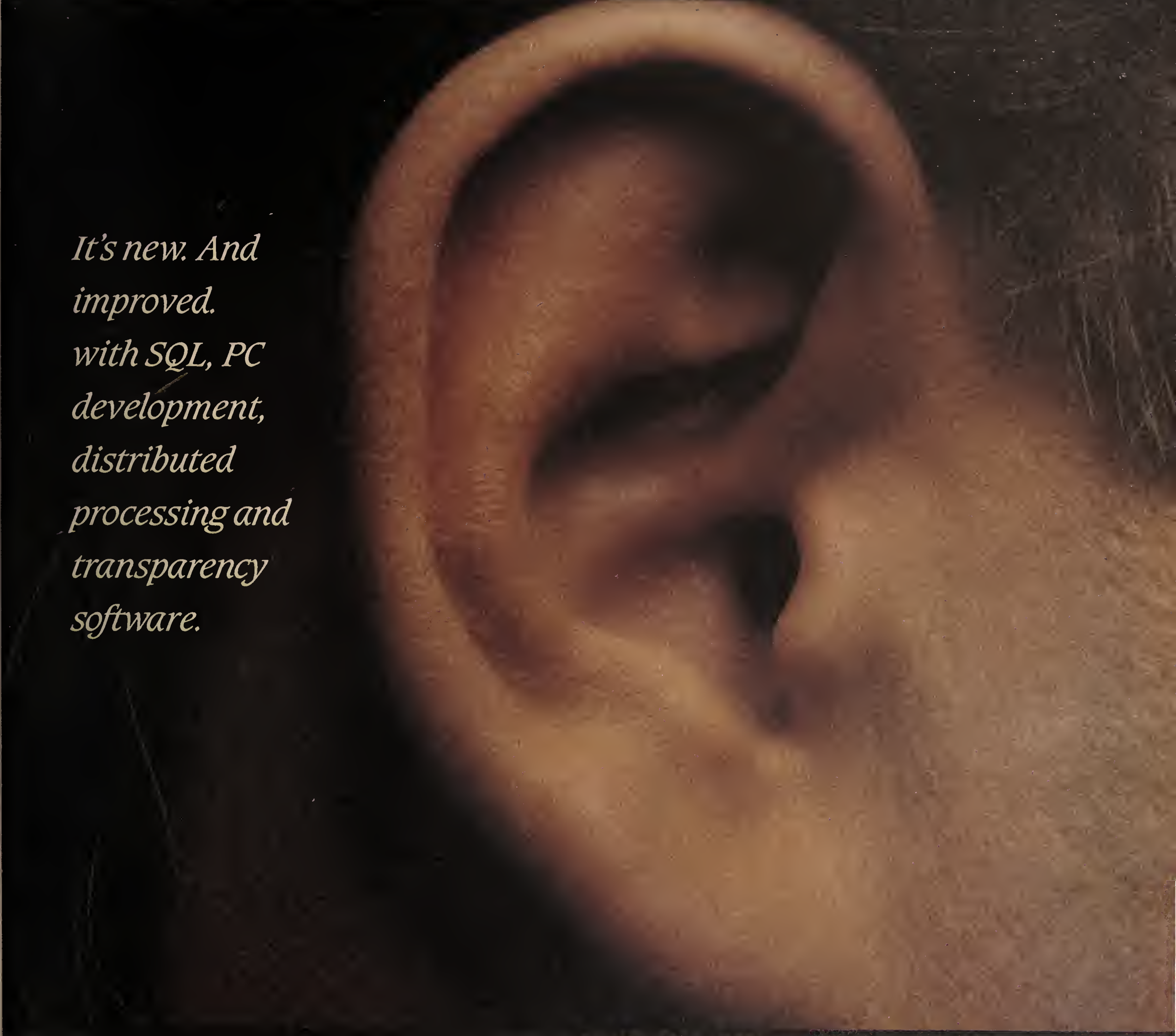

IBM slashes RS/6000 prices

BY PATRICIA KEEFE
CW STAFF

Touting its commitment to provide more bang for the buck, a nimble IBM beefed up its RISC System/6000 line last week with new compilers and added memory while cutting prices on most models. Cost savings range from $830 to $52,140.

However, users may reap few benefits from the seemingly impressive price cuts, which one analyst claimed are nothing more than IBM going public with its discount schedule.

David Card, an analyst at International Data Corp. in Framingham, Mass., said that while IBM will continue to offer discounts to its customers, they will probably not be as significant as they were before the cuts.

Users will also have to wait until mid-September for a previously promised low-end workstation, according to analysts.

Analysts praised IBM for its quick response to the March release of Hewlett-Packard Co.'s HP 730. As a result, IBM's prices are right in line with HP's, Card said.

IBM had to respond in some way to HP, which Card and other analysts said is the current price/performance leader in reduced instruction set computing (RISC) workstations. Card said the players in the RISC workstation market are constantly changing the rules — that is, resetting the pricing parameters.

However, Card noted that in 1990, IBM managed to move only 250 of the big rack-mounted System 900 family; conversely, the System 550 was much more successful.

IBM also increased the amount of standard memory and disk storage capacity on selected models and slashed prices on the RS/6000 entry-level three-dimensional color graphic adapters. The 8-bit adapter was $4,160; it now costs $2,320. The 24-bit card was $10,400; it now costs $4,520.

However, the bottom line for users, who were already benefiting from deep discounting by IBM, should prove to be either a wash or negligible, claimed Nili Young, a vice president at Meta Group, Inc. in Stamford, Conn. She challenged a statement by Jeff Mason, IBM's advanced workstation and AIX systems director, who said the announcement will enable customers to run their applications "faster and more cost-effectively."

Young claimed that all IBM really did was translate into public prices what it was already offering users privately. Those discounts are said to have ranged from 30% to 60%. Formalizing the process means lower discounts from IBM; hence, users can expect to pay the same prices or a shade less, she claimed.

The Model 950 received the heaviest price cut. It has yet to ship, but users made it clear to IBM after its announcement that it had been mispriced, Young said.

The performance increase is attributed to a new Fortran compiler, which includes a new release of AIX XL Fortran Run Time Environment/6000.

Senior Writer Maryfran Johnson contributed to this report.

Change at the top

The high end of the IBM RISC/System 6000 family was most affected by the significant price cuts

System	Old base price	Old memory range (bytes)	New base price	New memory range (bytes)
320H	$11,750	16M-160M	$11,750	16M-400M
520	$22,330	8M-355M	$21,500	16M-355M
530	$38,410	16M-355M	$31,500	32M-355M
550	$130,000	64M-800M	$52,500	64M-800M
730	$62,625	16M-355M	$48,275	16M-355M
930	$61,910	16M-670M	$59,500	32M-670M
950	$146,640	32M-857M	$94,500	64M-1.7G

Source: IBM

CW Chart: Doreen St. John

FCC

FROM PAGE 1

most important point is that this will bring end users some choices," said FCC Commissioner Andrew C. Barrett.

Industry watchers compared the FCC's proposed action with court rulings in the late 1970s that allowed MCI Communications Corp. and others to connect to the public network in order to offer long-distance services in competition with AT&T. That resulted in new services and sharply reduced costs.

Local-access charges total $25 billion, with only about $100 million now going to alternate providers such as Metropolitan Fiber Systems, Inc. (MFS), which brought the local-access petition to the FCC 18 months ago.

MFS provides fiber-optic communications services in 11 cities in competition with local telephone companies. Access to the local networks will enable MFS to serve midsize and small businesses that cannot now afford direct dedicated links to MFS facilities. These users will now be able to tie into an MFS fiber-optic net via existing local telephone lines.

Royce Holland, president of MFS, said the company has invested more than $100 million in a plant and equipment.

Without the connections to the local telephone companies, 10 to 20 major markets can be economically served by the alternate fiber-optic carriers. With it, the market will expand to 50 to 75 metropolitan areas, he said.

Holland said co-location of MFS equipment at telephone companies' central offices can also offer users a backup.

He added that MFS will seek reciprocal arrangements with the Bell companies so traffic can be switched from one network to another in the event of a network outage.

Implementation details for the FCC proposal will be worked out after a period of additional public comment. A final order could be issued in eight to 12 months.

Convex targets low end of Cray supercomputer line

BY J. A. SAVAGE
CW STAFF

RICHARDSON, Texas — The rivalry in the supercomputer arena was jacked up a notch last week when Convex Computer Corp. announced a system family aimed at the lower portion of Cray Research, Inc.'s processor line.

Convex introduced the C3 series, ranging from 44 sustained million floating-point operations per second (MFLOPS) Linpack performance to 111 MFLOPS per CPU.

The high end of the family, the C3800s, are most closely targeted at Cray. Intensified competition with Cray combined with recessionary cutbacks on high-end buying are likely to mean good deals for supercomputer consumers in the next six months, said analyst Gary Smaby, president of Smaby Group, Inc. in Minneapolis. "Both Cray and Convex could get bloodied, and buyers are going to benefit," he said.

The C3800s begin at $2 million and depend fully on gallium arsenide for speed. They can be configured with up to eight processors.

Analysts agreed that the midrange systems, the C3400s, which sustain 34 MFLOPS in a single-processor configuration, are likely to be the most popular. Starting at $650,000, the C3400 also includes gallium arsenide technology in its processors.

At the low end, the C3200s, which Smaby said are positioned as huge workstation servers, start at $350,000. The C3200 is a streamlined model of the company's current C2 system, said Frank Marshall, vice president of engineering at Convex.

Scheduled delivery dates are staggered throughout the year. The C3200s are available now, the C3400s are scheduled to ship in the third quarter and the C3800s are expected to have limited availability by year's end.

"The announcement protects Convex's position as middleweight champion," said George Lindamood, director of high-performance computing at Gartner Group, Inc. in Stamford, Conn. He added that the midrange systems could even attract new supercomputer users.

New frontiers

Convex Computer Corp.'s C3 series not only builds on the earlier C2 architecture with the C3200 but also expands into the worlds of gallium arsenide and RISC

Model	CPUs	Maximum memory	Peak performance	Base price
C3200	1 – 4	2G bytes	200 MFLOPS	$350K
C3400	1 – 8 (RISC)	2G bytes	800 MFLOPS	$650K
C3800	1 – 8 (gallium arsenide)	4G bytes	2 GFLOPS	$2M

Source: Convex Computer Corp.

CW Chart: Tom Monahan

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NEWS SHORTS

And the winners are . . .

The Fourth Awards for Achievement in Managing Information Technology were handed out last week in New York. The five winners are David M. Carlson, senior vice president for corporate information systems at K Mart Corp.; Richard A. Detweiler, vice president and professor of psychology at Drew University; John F. Muratore, chief of the Reconfiguration Management Division of the National Aeronautics and Space Administration's Johnson Space Center; John W. Turko, vice president and director of management IS at Kennametal, Inc.; and C. Diana Whitehead, executive director of marketing support at Pacific Bell. The awards are sponsored by American Management Systems, Inc. and Carnegie Mellon University.

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Prime adds to minicomputer line

Prime Computer, Inc. expanded its proprietary line of midrange 5000 series systems last week with the announcement of the 5370. The system incorporates a dual CPU design on a single board and employs CMOS technology. Available immediately, the standard 5370 configuration is priced at $226,000.

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IBM center to service Kodak

IBM opened a 189,000-sq-ft data center last week in Rochester, N.Y., to help manage Eastman Kodak Co.'s IS operation under a 1989 outsourcing agreement. About 300 employees will staff the facility, which will help IBM consolidate operations now performed at three Kodak sites.

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Jessel named IS chief at EMI

EMI Music in New York has named former McKinsey & Co. IS consultant Peter G. Jessel to fill its vacant position of senior vice president of information technology. The post had been open since the resignation of R. Anne Payne [CW, Feb. 4]. Jessel had been an industry consultant for the information technology/systems practice at McKinsey for five years.

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Micrografx upgrades Designer

Micrografx, Inc. shipped the 3.1 upgrade to its popular Microsoft Corp. Windows-based Designer illustration package last week. An IBM Presentation Manager version of the product will be available by the fourth quarter, the company said. Registered users of Designer 3.0 and up can upgrade for $49.95; all other Designer users can upgrade for $99.95. New features include file compatibility with more than 30 other file formats. Also built in are two new special effects — text along a path and object blending — as well as a Windows-based installation program and network file locking.

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DEC, Hyperdesk team up

Hyperdesk Corp. and Digital Equipment Corp. last week announced their joint development of a distributed computing technology that the companies are proposing as an industry standard for software developers. DEC and Hyperdesk will merge their definitions of a central communications and integration manager — called Object Request Broker (ORB) — that ties together various types of software objects across diverse platforms. The ORB manager is the first of several standards being defined by the Object Management Group.

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Lotus seeks ruling in Borland case

Lotus Development Corp. asked a federal judge in Boston last week to forget about a trial and award it a win with a summary judgment ruling in its copyright infringement suit against Borland International, Inc. The two sides are scheduled to appear in court in June to work out a trial date. However, Lotus jumped the gun in its request for a summary judgment by saying that there are no factual differences to be settled in a trial. Lotus claimed there is no doubt that Lotus' 1-2-3 was copyrightable and that Borland copied elements of that program. Borland continues to deny this.

More news shorts on page 111

Multimedia PCs make appearance

BY JAMES DALY
CW STAFF

The industry's slow crawl toward multimedia enjoyed a microburst of momentum last week when hardware manufacturers Tandy Corp. and Compuadd Corp. unveiled new offerings and Sun Microsystems, Inc. sketched out future multimedia-based product directions.

Analysts, however, noted that the link between multimedia — the blending of audio, video and animation into traditional data presentations — and the needs of the average computer user remain elusive and could represent a serious marketing challenge.

The five-member Tandy offering is the equivalent of the firm's current line of business computers with Microsoft Corp.'s Multimedia Extensions for Windows preinstalled. The machines include a compact disc/read-only memory drive and are priced from $2,599 to $5,499 — approximately $250 to $800 more than similarly configured nonmultimedia Tandy personal computers. The new units are scheduled to be in all 7,000 Radio Shack stores by summer, officials at the Fort Worth, Texas-based firm said.

While the Radio Shack connection represents a significant distribution advantage, analysts said the price of the new models could result in slow sales.

"Tandy has a good feel for the home market, but these machines are still too pricey for most consumers, who right now have little need for what multimedia offers," said Tim Bajarin, an analyst at Creative Strategies Research International, Inc. in Santa Clara, Calif.

Austin, Texas-based Compuadd took the multimedia plunge with the announcement of an Intel Corp. 80386SX-based PC that provides photolike images, stereo sound, television, AM/FM and CD capabilities.

Available soon

The Compuadd setup sells for $2,995, and a multimedia upgrade kit will cost $895. Both are scheduled to ship to developers this week and will be generally available in July.

While Tandy and Compuadd were demonstrating what they could do today, Sun officials looked to the future and plotted out its first strides into multimedia territory. Wayne Rosing, vice president of advanced technology, demonstrated a Sparcstation-based multimedia setup last week at Demo '91 in Palm Springs, Calif.

The hookup simulated a live video conference connecting two Sparcstations over an Ethernet network.

The arrangement also included a prototype of a modified Sun S-bus wired with Intel I750 chips to carry the video feed.

1-2-3 users split on 2.3 upgrade, Windows version

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. jazzed up the low end of its spreadsheet family last week with the debut of 1-2-3 Release 2.3. But by now, user interest may have shifted to the Release 3 generation, particularly the forthcoming Windows version.

Lotus accounts said users of Release 2.2, the predecessor to 2.3, tend to fall into two groups: those who refused to purchase 1-2-3 3.0 after it finally shipped and are now waiting for 1-2-3/Windows and those who are tied to Intel Corp. 80286-based computers. At minimum, the latter group is expected to upgrade.

Leapfrog to 3.1

At Lehman Brothers, Inc. in New York, the decision was made a while ago to leap from 1-2-3 Release 2.01 to 3.1. "We are much more interested in the Windows version than in 2.3," said Jude Gartland, senior vice president of investment banking. He said many current Release 2.2 users are probably using 8088- or 80286-based machines that lack the memory needed to run later versions of 1-2-3, such as Release 3.0.

"If they are not about to buy 386s, or they have no interest in Windows, then they will probably be very interested in 2.3," Gartland said. Most user surveys indicate interest in Windows and 386 personal computers.

Sheldon Laube, director of technology at Price Waterhouse, is another Release 2.2 (and 3.0) user. He, too, has long since made a decision to move to the Version 3 family. "We just want to make one more jump, to a Windows spreadsheet. It's just not worth all this fiddling around [with other releases]," he said.

But for those content with the tried-and-true Release 2 generation, their annual upgrade fix comes with improved graphical and analytical features.

Priced at $495, 1-2-3 Release 2.3 includes interactive what-you-see-is-what-you-get display and presentation-quality output capabilities, spreadsheet auditing tools, a file-finding feature and other ease-of-use improvements such as interactive dialog boxes, "vastly improved" Help facilities and improved error-handling, Lotus said.

Also unwrapped was 1-2-3 for DOS Release 3.1+. It includes the Viewer and Auditor capabilities introduced in Release 2.3 as well as the Solver technology first introduced in 1-2-3/G for OS/2. Currently in beta testing, 3.1+ is expected to ship within 60 days.

Four versions of 1-2-3

Lotus now has four key versions of 1-2-3 on the market: 2.2, 2.3, 3.0 and 3.1 — a release that is Windows 3.0-compatible only. A fifth version, 1-2-3 for Windows, was designed to take advantage of Windows 3.0. It is now in beta testing, and industry observers expect a June ship date.

The aging Release 2.2 remains a best-seller, according to users and software resellers. It tops the sales list at Corporate Software, Inc. in Canton, Mass., a spokeswoman said.

An Englewood, Calif.-based Merisel spokeswoman said 1-2-3 Release 2.2 has consistently placed third or fourth on the firm's hot list since December.

CORRECTIONS

Because of an editing error, we reported that the estimated cost of the National Weather Service's new Advanced Weather Interactive Processing System (AWIPS) was $3 billion [CW, April 1]. That is the cost for the entire Weather Service modernization, including three major components, in addition to AWIPS.

. . . .

TPL Tables, a personal computer-based cross tabulation and table production software package, was incorrectly referred to as TP Tables in a new product announcement [CW, April 15]. TPL Tables is a product of Arlington, Va.-based QQQ Software, Inc.

. . . .

The article "IS adjusts as portables fly the coop" [CW, April 22] incorrectly said Hyundai Motor America's information systems department is not in charge of laptop management. It does in fact have this responsibility.

DEC to take PC high road

BY PATRICIA KEEFE
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. will take another stab tomorrow at the high end of the personal computer market, focusing on direct sales to its installed customer base.

The latest foray, which comes on the heels of some resounding failures in this market, will serve DEC in two ways, analysts said: It will stem the tide of DEC accounts crossing over to purchase PCs from IBM, and it will get DEC on the PC bid lists. DEC is planning to unwrap a family of PCs tomorrow.

DEC is expected to position its systems as a natural extension of its VAX and terminal businesses. DEC is "trying to make the affinity to the VAX look more desirable," said Nili Young, a vice president and analyst at Meta Group, Inc.

Analysts were agog over DEC's plans to be extremely price-competitive. Several said it will be difficult for DEC to make money on the actual PCs. However, the PCs are expected to provide incentive for more add-on sales related to DEC's monitor, network software and VAX equipment. For example, some of the boxes will come equipped with Ethernet cards but not DEC's Pathway network software — hence the extra sales.

"DEC is in the terminal business; why shouldn't they be in the diskless workstation business? It's perfectly logical," said Frank Dzubeck, a consultant at Washington, D.C.-based Communications Network Architects, Inc..

Hampton, N.H.-based Workgroup Technologies, Inc. said the new machines will come from multiple sources. The models are said to include the following:

- An Intel Corp. I486DX-based box. Priced at approximately $6,000, it also features 26.2 million instructions per second, a turbo cache, Ethernet and SCSI 2 (possibly on a single board); 8M bytes of memory (expandable to 64M bytes); a Texas Instruments, Inc. graphics processor; 178K vector per second graphics performance; and 2M bytes of graphics memory.
- A Tandy Corp.-sourced 486DL. Priced in the vicinity of $11,500, it will run at 33 MHz and have six Extended Industry Standard Architecture slots, 10 5¼-in. drive bays, 4M bytes of memory and a 1G-byte disk.
- Two Ing. C. Olivetti & Co.-based portables. One is a 6-pound notebook priced at $4,850 that is based on a 386SX 25-MHz chip. (Intel has not announced a 386SX with that speed rating, but Advanced Micro Devices, Inc. has said it will deliver a 25-MHz clone chip.) It has 2M bytes of memory, a 60M-byte disk, an internal modem and a 9-in. display. Also slated to debut is a heavier (about 11 pounds) luggable priced at roughly $6,460. It will feature a 386DX running at 33 MHz with 2M bytes of memory, a 60M-byte disk, a removable display and an 11-in. LCD Video Graphics Array support (32 gray scale). Pricing was unavailable.

Dzubeck and Young dismissed the view held by some analysts that DEC's offering represented the first collision of PC and workstation technology.

Court tosses Inslaw appeal

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — A three-judge panel of the U.S. Court of Appeals threw out two lower court rulings last week that said the U.S. Department of Justice had stolen software from Inslaw, Inc. and had conspired to drive the firm out of business.

The Court of Appeals for the Washington, D.C., circuit did not consider the validity of the lower court findings but said the bankruptcy court that first upheld Inslaw's charges had exceeded its authority.

This is a serious setback for Inslaw, which said it has spent five years and $6 million in legal fees on the matter, but the company vowed to fight on. It may ask the full court to reconsider, it may appeal to the U.S. Supreme Court, or it may go to more specialized tribunals set up by the government to hear disputes over contracts, trade secrets and copyrights, Inslaw President William Hamilton said.

"Not many firms could have lasted this long, and now to have this happen is just unbelievable. But there's no way in hell we will put up with it," an obviously embittered Hamilton said. It may cost the tiny firm "millions more" to reach the next major legal milestone, he said.

Double trouble

Since the bankruptcy court trial in 1987, Inslaw has learned of additional alleged wrongdoings by the Justice Department.

"The new evidence indicates that the motive for the [software theft] was to put Inslaw's software in the hands of private-sector friends of the Reagan/Bush administration and then to award lucrative government contracts to those political supporters," Hamilton said.

He said other evidence suggests that the software was also illegally sold to foreign intelligence agencies [CW, April 1].

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IBM

FROM PAGE 1

the mainframe relational database management system market with DB2, but it has struggled for more than one year to release a full-function version of its strategic Officevision. In total, IBM is simultaneously leader, follower and flounderer.

"I think their portion of the overall software pie is decreasing," said Michael Sztejnberg, a vice president of information systems at Manufacturers Hanover Trust Co. "Mainline software is staying stable, while many, many other disciplines are springing up that IS shops are spending dollars on. And in those areas, IBM is not as strong, and in some is just one of many."

Image shift

The general perception of IBM that is emerging among customers and observers goes beyond individual market results. IBM is now perceived as an influencer and no longer as the rule maker and dominant product provider it once was. While customers look to IBM to provide computing architectures and guidance, they want to make their own product decisions.

IBM executives agreed there has been a shift, but they said it is one of moving away from a product focus and zeroing in on the complex set of customer requirements. To IBM executives, the bigger job is to get systems to customers by providing core technologies and encouraging other suppliers to provide additional pieces, said Robert Libutti, director of market strategies at IBM's Programming Systems Division.

In addition, IBM hopes to provide whatever services are necessary to make these complex systems work. "The goal is to realize the capability that the customer needs and to do it quickly," said Richard Goldberg, IBM's assistant general manager of software marketing.

For IBM, the emerging role of influencer means that when it comes to future software revenue, there will be far fewer sure bets than there once were. Its influence assures it will continue as a signficant factor, particularly in large systems markets, but does not guarantee that customers will put their software dollars in IBM's pockets.

IBM has a goal of achieving one-third of its revenues from software and services in this decade. A company spokesman said it is close to that goal now. Last year, worldwide software and services revenue accounted for 31% of total revenue, according to the IBM annual report. The company does not publicly state a separate goal for percentage of revenue from software. That revenue has been creeping up since 1986, when it accounted for 10.6% of revenue, to 14.4% last year.

Customer perceptions

Although IBM is on track, it faces an increasingly competitive market. Interviews with more than 50 users, analysts and third-party executives show that IBM now faces some of the following customer perceptions:

- Many large-system and mid-range customers look to IBM to provide an overall framework for corporatewide computing. While they want IBM to paint the big picture, they also want the flexibility to fill in the details with their own product choices.
- They continue to rely on IBM to provide core software pieces such as operating systems.
- Many count on IBM to provide the core subsystems, such as databases, as well. But what is more important to customers is for IBM to set the standards here, which does not always translate into revenue for IBM. Customers are willing to license a non-IBM product if it fits with IBM's scheme.
- Beyond databases, IBM typically becomes only one software supplier among many.
- With some exceptions, customers do not perceive IBM as an applications provider.
- On the desktop, IBM is respected for its ability to set operating system and network standards but not for its skill in programming any applications on its own. IBM has practically given up on the single-user applications market.
- Many customers give IBM credit for finally making the plunge into open systems. However, there is healthy skepticism about how committed IBM is.

Work hard for the money

In short, as IBM moves further away from its traditional base, it faces increasingly competitive pressures that will force it to work harder for each software dollar.

Even within the IBM core base, it is hardly a sure bet. While some large IS shops are closely wedded to IBM products and direction, others prefer to keep their distance.

For example, Chuck Myer, director of data resource development at Pacific Bell, has a close and strategic relationship with IBM and calls the company a "business partner."

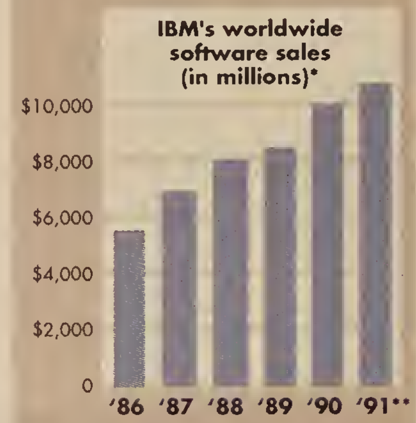
However, several other customers suggested IBM does not have all the answers.

"We look at what they say, look at their partners, and that helps guide us in the tools that we pick," said James Stuber, a vice president at Mellon Bank Corp. "But we wouldn't pick one just because IBM says it's the one. If I found a tool that was really good and it wasn't AD/Cycle, I would have no hesitation."

Next week: The highs and lows of IBM's software performance in the 1980s.

IBM has fattened its income with software sales ...

For the past five years, IBM's sales force has pushed software sales

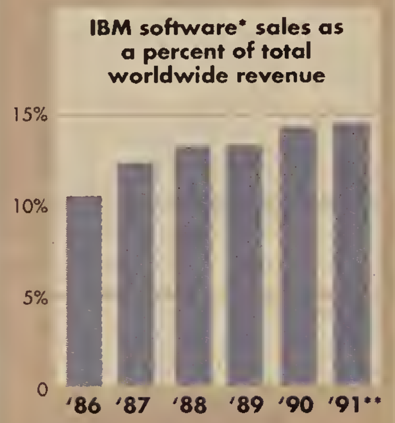


*includes applications and systems software
**estimated by UBS Securities, Inc.

Source: IBM

... and bulked up software as a portion of annual revenue

Although software is a growing part of total revenue, the rate of growth is leveling off



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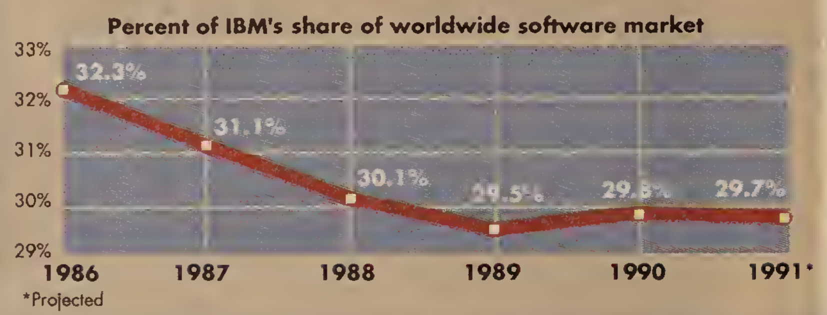
Source: IBM

IBM's slice of worldwide software sales

America's biggest computer company holds less of the software market now than it did five years ago



*Projected

Source: Gartner Group, Inc.

Learning to listen

Asked to compare today's IBM with the company of earlier times, IS managers said one major difference is that IBM has finally learned to listen.

"I would say they can still do better, but we have to realize from where they came," said Richard Kolbe, director of MIS at Harley-Davidson, Inc. in Milwaukee. "They seem to be extremely receptive to discussing what we at Harley are doing instead of saying, 'Hi, we're IBM, and we have all your answers.' "

Since the late 1980s, IBM has set up user councils that give customers a chance to convey their requirements to IBM before a product is complete. Users also noted a change in their on-site relationships with IBM representatives.

However, these actions do not spring from kindness, and IBM is the first to admit it.

"Customers have the best vehicle to tell us what to do: their purses," said Richard Goldberg, an IBM assistant general manager in charge of software marketing. "When you go back to 1985, 1986, we began to look at the way customers wanted to spend their money, and we were obviously not listening to what they were saying. That's what got us refocused."

Dan Cavanagh, senior vice president of IS at Metropolitan Life Insurance Co., said that in the early 1980s, IBM made an effort to hear what users had to say, but "you felt like it wasn't serious, like they really weren't listening."

However, Cavanagh said, he remembers a turning point in IBM's approach in the late 1980s. Metropolitan Life had set up a meeting with IBM to discuss communications software. While these meetings were usually attended by IBM representatives, he explained, this time Ellen Hancock, an IBM vice president and general manager of communications systems, showed up.

"Something changed in terms of who was listening," Cavanagh said. "That was far different than just having a bunch of staff people."

IBM
SOFTWARE
GIANT IN
TRANSITION

Surveying a giant

IBM's huge size and mainframe roots are both its greatest strengths and its most frustrating weaknesses, according to IS managers who were interviewed recently.

On one hand, IBM's size gives users a sense of comfort. "After being with Cullinet [Software, Inc.] and seeing it die, it scares you to think of being tied to a smaller, independent vendor," said John Fisher, a software manager at Bergen Brunswig Corp.

At the same time, customers said IBM's software business is so big and bureaucratic that it often takes too long to ship products, and many products are too generalized in an attempt to meet many users' needs.

"They have a tendency to try to do everything for everybody," said Jack Cooper, chief information officer at Joseph E. Seagram & Sons, Inc. "They could use more focus."

IS managers said IBM's traditional business — mainframe operating systems and support of the large-systems environment — is still a significant strength. "When something doesn't work, they will darken the skies with support help to fix it," said Thomas Loane, head of IS at Alamo Rent A Car, Inc., of his mainframe environment.

Yet some users suggested this long-term focus on large systems has precluded IBM from doing well with applications.

"They tend to do a poor job with end-user products," said Terry Lowder, vice president of technology research at Banc One Services Corp. "That's why they are working more and more with business partners."

Doug Underhill, a vice president at CSX Technology, Inc., the IS arm of CSX Corp., said that while mainframe expertise is a plus, he also often feels that IBM staff members have not caught up with the faster pace and new dynamics of today's environment.

"There are a lot of people who are quite knowledgeable about the way it used to be," Underhill said.

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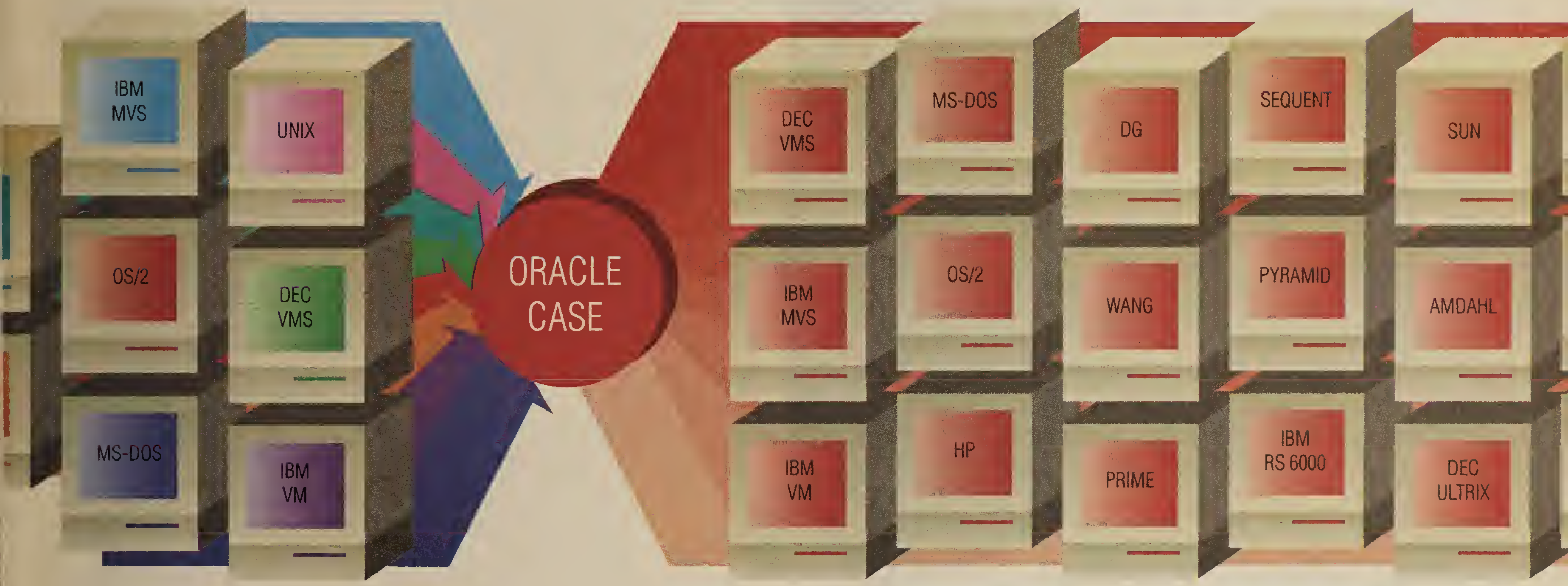

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SPA drops piracy suit against Snap-on Tools

Association dismisses charges after tool company proves ownership of software following raid

BY CHRISTOPHER LINDQUIST
CW STAFF

WASHINGTON, D.C. — The Software Publishers Association (SPA) announced last week that a software piracy suit filed against Snap-on Tools Corp. had been dropped for lack of merit — the first time a lawsuit brought by the SPA has been withdrawn.

The suit, which listed Ashton-Tate Corp., Lotus Development Corp., Wordperfect Corp. and Microsoft Corp. as plaintiffs, claimed that Snap-on had violated the copyright on several software products by illegally copying them.

The SPA had a signed affidavit from a former Snap-on employee that indicated Snap-on was in possession of pirated software, according to Ken Wasch, executive director of the SPA. The SPA then gathered more evidence from the software suppliers, including software registration forms. It subsequently obtained a search, seizure and impoundment order.

Following a March 20 raid on Snap-on's Kenosha, Wis., headquarters, the SPA audited all of the personal computers on the premises, Snap-on spokesman David Heide said.

The next step for the SPA was to throw the ball back into Snap-on's court, leaving the company to demonstrate ownership through manuals, invoices, disks and purchase orders, Heide said.

Snap-on employees spent "a couple of weeks" collecting the evidence needed to prove ownership of the software, he added.

> "IT COULD HAVE been truly embarrassing and disastrous for the company."
>
> DAVID HEIDE
> SNAP-ON TOOLS

When that evidence was presented to the SPA, the case was dropped. Despite the raid, Heide said, Snap-on did not hold any grudge against the SPA. "We're just glad it's over, and we can get back to work. It could have been truly embarrassing and disastrous for the company," he said.

Wasch said the SPA felt "no remorse" over the situation and said the finding that Snap-on was innocent showed that the judicial system was working properly.

He also indicated that the dropped suit would have no impact on the SPA's future investigations into software piracy violations. "The prosecutor that wrongfully accuses somebody of burglary does not stop arresting people for burglary," he said.

In keeping with this, one day after announcing that the Snap-on suit had been dropped, the SPA reported it had concluded a suit against Parametrix, Inc., a Seattle-based environmental and engineering consulting firm. The settlement, under which Parametrix will pay $350,000 plus attorneys' fees, was the largest in SPA history, according to Wasch.

Joel B. Gilman, a Seattle attorney who specializes in computer law, said a company found innocent in an SPA suit could have some legal recourse for recovering lost revenue and the cost of staff time during the raid.

However, Heide indicated that Snap-on did not intend to seek reimbursement. "We're not going to try to recover expenses," he said. "Certainly, the information that [the SPA has] operated on up until now suggests that their track record is really pretty good. I think our feeling is, 'Let's just mark it up and get back to work.' "

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VAX line set for complete overhaul, DEC says

BY MARYFRAN JOHNSON
CW STAFF

ATLANTA — Digital Equipment Corp. users can expect a tenfold increase in VAX/VMS price/performance by 1993, a senior DEC official told a user group convention here last week.

William Demmer, vice president of VAX systems and servers, said such enormous strides in cost efficiency and performance hinge on the VAX architecture's move onto a reduced instruction set computing-based CPU.

Software developers will have the so-called Alpha VAX next year, and customers can expect system deliveries the following year, Demmer said in the keynote speech at the DEC Users Society (Decus) convention.

In the meantime, DEC will unveil new models to replace every computer in the product line over the next year, he said.

While some users later expressed skepticism about such ambitious delivery schedules, many others said they found Demmer's message on the future of VAX/VMS reassuring. "I liked hearing that the driver is still VMS, with bridges into other software," said Richard N. Wolf, assistant systems manager at the Walter Reed Army Institute of Research in Washington, D.C.

"Opening" the proprietary VMS operating system through compliance with a variety of industry standards is another strategy users applauded.

"This open VMS certainly looks like a step in the right direction. It may mean their survival with shops like ours that are looking for more bang for the buck," said Donald Benthusen, VAX project manager at Sandia National Laboratories' computer center in Livermore, Calif.

"I'm a bit confused about what the increasing price/performance will mean to us," said Ronald Hoffman, manager of the academic computer center at Pennsylvania State University's Behrend College in Erie, Pa. "What kind of systems do I want to purchase now so they won't be obsolete in two years?"

Before his visit to Decus, Hoffman had settled on a VAX 4000 Model 200 as a server for his department's personal computer network. Now, he is reconsidering the decision, after discovering that the Q bus connecting peripherals to the machine will no longer be used by DEC on any future systems.

Other Decus discussions

Other hot issues at the convention, which drew more than 4,900 DEC customers to the Georgia World Congress Center, centered on finding better ways to manage networks of PCs and secure VAXs against intruding hackers.

Customers packed the seminars dealing with PC integration strategies and details on the latest version of DEC's Pathworks software, which many still call by its former name of Personal Computer Systems Architecture.

Du Pont Co. in Wilmington, Del., for example, is working with Pathworks as it prepares to connect 3,000 PC users, said Steven Seiler, a senior software engineer at Walklett-Burns Ltd. in Great Valley, Pa., a consulting firm working with Du Pont on the project.

"It's one thing to manage a network of 50 PCs, but what we need to find out is whether Pathworks is up to managing 3,000 of them," Seiler said.

Among the improvements in Version 4 of Pathworks, he noted, are interaction with Microsoft Corp.'s Windows and the ability to use the VAX server as a common area to store data from IBM Personal Computer compatibles and Apple Computer, Inc. Macintoshes.

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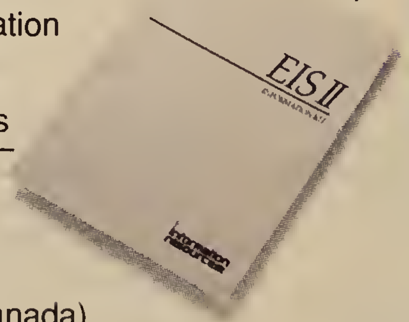

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**David W. DeLong, co-author of "Executive Support Systems: The Emergence of Top Management Computer Use."*
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Systems security tips go on-line

BY MICHAEL ALEXANDER
CW STAFF

FAIRFAX, Va. — Information systems security managers, electronic data processing auditors and others involved in systems protection know that it can often be difficult to keep on top of security technology and fast-breaking news. This week, National Security Associates, Inc. will officially kick off an on-line service dedicated solely to computer security.

The repository contains databases of such items as articles on computer security that have appeared in 260 publications, computer security incident reports and vendor security products. One database is devoted to activity in the computer underground and to techniques used to compromise systems security.

"This is a tough industry to keep up with," said Dennis Flanders, a communications engineer with computer security responsibilities at Boeing Co. Flanders has been an alpha tester of National Security Associates' system for about six months. "Security information is now being done piecemeal, and you have to go to many sources for information. The appealing thing about this is [that] all of the information is in one place."

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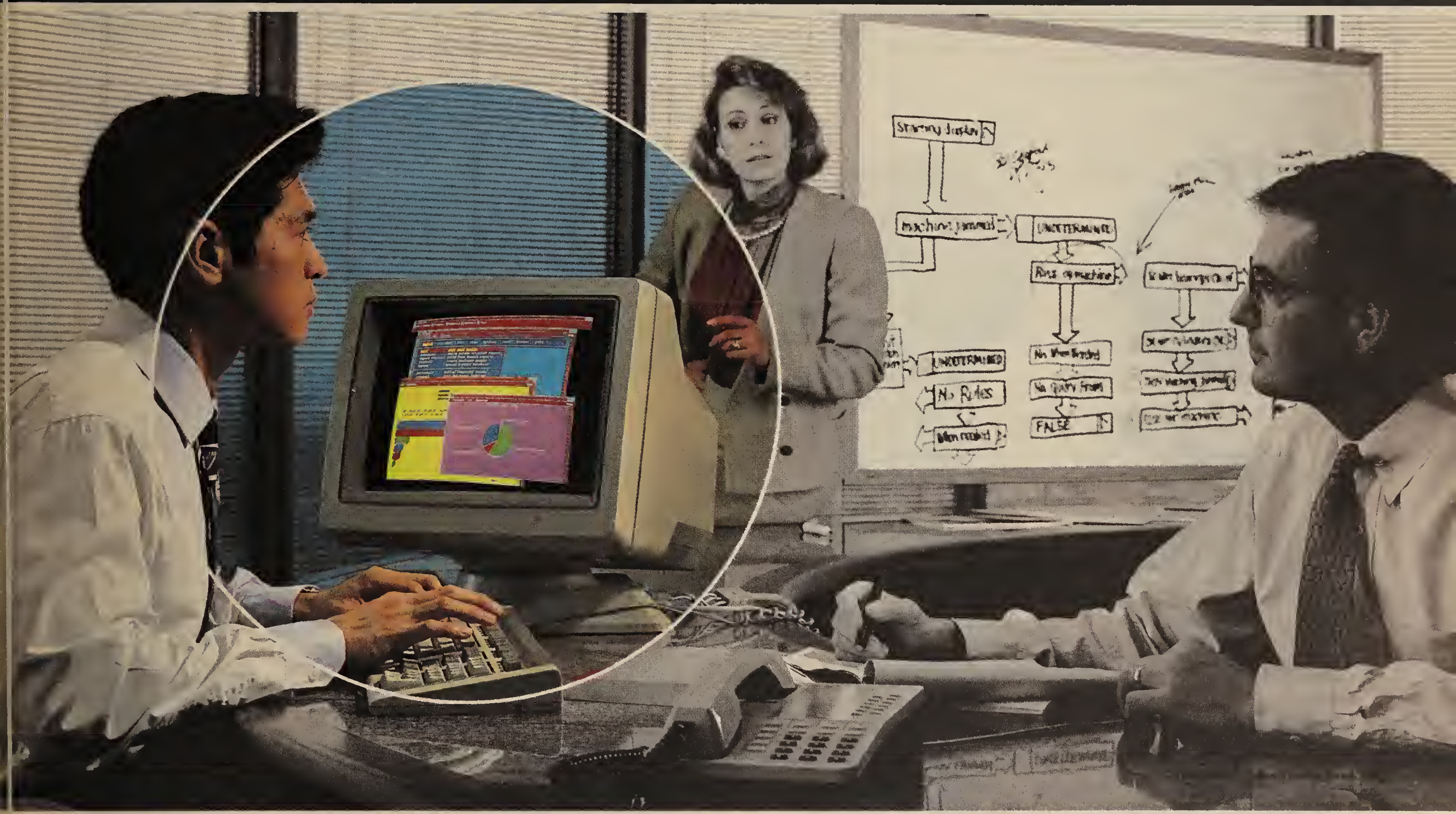

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Vendor heavyweights form support alliance with Novell

BY JIM NASH
CW STAFF

SANTA CLARA, Calif. — Network managers said they are skeptical but optimistic about a vendor support alliance announced last week by Novell, Inc. The alliance consists of industry heavyweights such as Microsoft Corp., Intel Corp., Apple Computer, Inc. and IBM.

Under what is being called the Technical Support Alliance, Novell and 11 other firms have said they will cross-train their support staffs, exchange information and equipment and consult directly with one another on problems [CW, May 6].

The object is to reduce vendor finger-pointing in network snafus by offering Novell resellers and customers holding direct-support contracts a single contact when tackling multivendor problems, said Darrell Miller, executive vice president of Novell's marketing and services.

The plan will work in reverse, too, Miller said. It will allow IBM customers, for example, to contact their account team to get answers about Novell Netware on IBM hardware.

"I think support on all levels has been an issue for a very long time," said Ted Kreutzer, systems administrator at Pacific Bell Directory in San Francisco. "To boost sales and get good public relations, [alliance members] have to do this."

"Alliances like these tend to go through a period of hoopla," said Steve Kissinger, information systems manager at Western Commercial Services in Mountain View, Calif. "But if customers continue to put pressure on [the alliance], I'm optimistic we'll see better service down the road."

"We [resellers and users] are going to have to make alliance members make it work," said Tom Thibault, a principal at Thibault Associates, Inc., a reseller in Walnut Creek, Calif. Thibault, who also leads a San Francisco-area Netware users' group, said an agreement such as this has been needed for years.

The alliance could work negatively, allowing members to make an end run around technology standards, Kissinger said. He said vendors could use the group's structure to come up with non-standards-based integration solutions.

Mike Butler, automation manager at Palm Beach International Airport in West Palm Beach, Fla., said his worry would be that competition would get between the alliance members and hinder long-term cooperation.

Alliance partners:

Ungermann-Bass, Inc., 3Com Corp., Oracle Corp., Novell, Inc., Netframe Systems, Inc., Microsoft Corp., Intel Corp., IBM, Hewlett-Packard Co., Compaq Computer Corp., Borland International, Inc. and Apple Computer, Inc.

Novell gears up for alliance

BY JIM NASH
CW STAFF

PROVO, Utah — Novell, Inc. is spending an estimated $20 million to grease its service wheels as part of the Technical Support Alliance it has spearheaded. Specifically, Novell has hired about 100 new support employees, purchased a $1 million telephone call-routing system and increased the education level of its service people.

The 12-company Technical Support Alliance that was announced last week allows resellers, or in some cases end users running Novell and any other ally's products, to call either of the two companies and get coordinated support.

If the alliance works as billed, Novell will need the new resources. The firm's goal is to become a hub surrounded by its present and future support allies, said Darrell Miller, executive vice president of marketing and services at Novell.

Subject to agreement

The service is subject to each company's existing support policies. Novell's partners can call one another to solve problems unrelated to Novell, but such communication is not part of this alliance, Miller said.

Notable in their absence from the group are Wordperfect Corp. and Lotus Development Corp.

During the past year, Novell said both companies were working with it to develop an integrated service pact such as the alliance. Observers said they had expected Lotus and Wordperfect to be the first alliance members.

Miller said Lotus' legal staff is still reviewing the agreement and is expected to join the alliance this year. He would only say that he hopes Wordperfect customers will petition the company to join the alliance.

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TECH TALK

Portable portable

- Park Engineering Associates, Inc. has taken the meaning of portable computing to new heights. The Spokane, Wash.-based company has introduced two versions of a portable computer called Compcap, each small enough to wear. The computers can be mounted on a hardhat or a softband model can be built into a belt or vest. They use a miniature display called the The Private Eye made by Reflection Technology. The display's image appears to float a few feet in front of the wearer when positioned in front of the user's eye. The portable computers, which are equipped with either Intel Corp. 80286 or 80386 microprocessors, are intended for mobile use. Possible applications include construction, industrial maintenance, manufacturing and medicine. The devices are priced between $1,500 and $3,000.

Illuminating work

- An instant camera that produces holograms may be one of the products to come from the discovery of a polymer that has the optical characteristics previously found only in a few small, expensive crystals. Researchers at IBM's Almaden Research Center in San Jose, Calif., said the polymer is the world's first to exhibit the "photorefractive" effect. Illumination by light causes electrical charges within the polymer — a mix of epoxy and organic material — to move, altering its index of refraction. When two laser beams cross within a photorefractive material, they create a pattern of electrical charge similar to a hologram that changes the optical properties of the material it is passing through. This effect makes it possible to store 100 complete holograms or images in a tiny space no larger than the head of a pin, researchers said. If coated onto goggles, a photorefractive film could disperse a laser beam so the wearer would not be blinded by the intense light.

Let your 'knowbots' do the walking

These software pieces will do away with users' need to know information locations

BY GARY H. ANTHES
CW STAFF

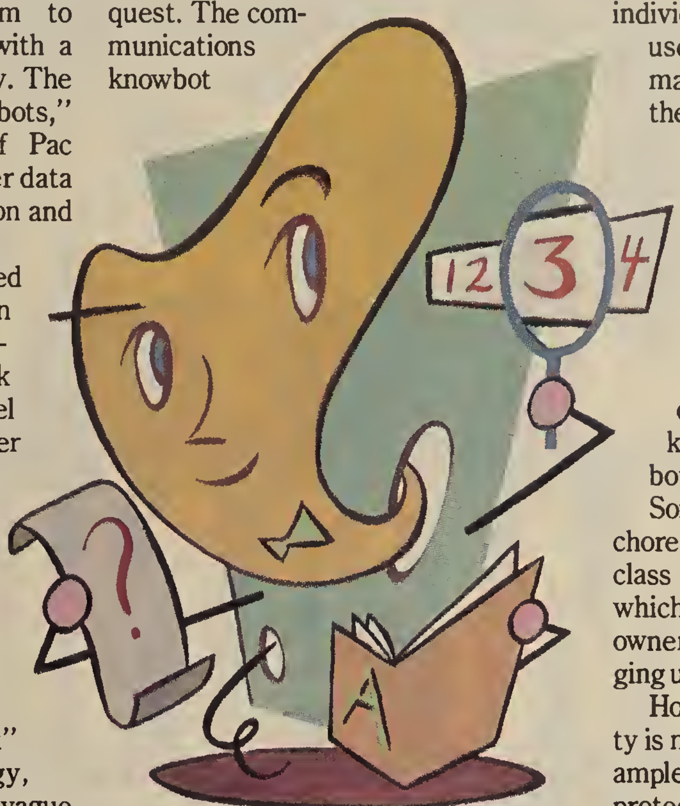
An emerging technology may free users of networked databases from the need to know where and how information is stored, enabling them to navigate vast digital libraries with a power and ease unheard of today. The magic will come from "knowbots," small, self-contained pieces of Pac Man-like software that travel over data networks, gobbling up information and doing their master's bidding.

Knowbots take specialized forms, like bees. Some remain in one place — in the user's computer, a database server or a network gateway — while some travel about, even transporting other knowbots. They can be couriers, police officers, housekeepers or diagnosticians. They can be cloned, modified or destroyed. Knowbots communicate by exchanging messages.

The Corporation for National Research Initiatives (NRI), which coined the term "knowbot" and is pioneering in the technology, said it foresees the day when a vague user request might spawn thousands of invisible exchanges among cooperating knowbots searching through databases separated by thousands of miles and returning the results seconds later to an unsophisticated but grateful user.

David Ely, manager of software development at NRI, gives a knowbot residing on his Sun Microsystems, Inc. workstation a few key words about a medical topic of interest. The knowbot moves over the Internet — a huge, loosely coupled aggregation of research networks — to the National Institutes of Health in Bethesda, Md., where it takes up residence in a Sun gateway.

After being cleared by a resident knowbot policeman, the user knowbot tells another knowbot, this one a communications specialist, of the user request. The communications knowbot translates the request into the format required by the specific database needed, performs the query and hands off the results to the user knowbot, which then scampers back over the network to its master.



John & Wendy

If the communications knowbot had been unable to satisfy all aspects of the query from databases under its control, the traveling knowbot might have sent a clone of itself to a location where the information could be found.

In another application developed by NRI, knowbots offer Internet users a "white pages" directory service by traveling over the network looking in more than one dozen major directories for the electronic mailbox addresses of individuals sought by the user. The user does not need to know the formats, organization or locations of the various directories.

There are nitty-gritty technical challenges to making all of this work, but Ely said two of his biggest worries are billing and security. How can he protect users from huge and unexpected access charges for browsing through commercial databases the users may not even know exist? As the power of knowbots increases, so do the risks.

Some accounting and security chores can be assigned to a trusted class of knowbots called couriers, which protect the rights of information owners by authorizing access and logging usage data needed for billing.

However, ensuring complete security is not easy, according to Ely. For example, he said, it would be difficult to protect against a Trojan horse knowbot, which might work like this:

John gives a knowbot with outwardly benign and useful functions to Mary. Code is hidden inside to send confidential data to John, who is not authorized to get it on his own. John knows Mary is cleared for the information, and when Mary uses the knowbot, it surreptitiously retrieves the confidential data and ships it to John.

"There are a few Ph.D. dissertations waiting in the wings on the topic of knowbot security," Ely said.

Architect brings 2-D computer designs to life

BY MICHAEL ALEXANDER
CW STAFF

Computer-aided design (CAD) has replaced mechanical drawing boards, but it is still a struggle to translate two-dimensional ideas into three-dimensional prototypes that can be handled and tested.

In recent years, several companies have introduced desktop manufacturing systems that turn computerized designs into 3-D prototypes. One type of system, based on a process called laminated object manufacturing, fabricates models one layer at a time from sheets of acrylic, paper or other material. The sheets are cut with a personal computer-guided laser.

One drawback of this type of rapid prototyping system is that it is difficult to stack the layers in precise registration and adhere them to each other. Another drawback is that this system is mainly limited to manufacturing single-color prototypes.

Patent pending

This week, Norman Kinzie, an architect and model maker, will receive a patent for what he said is a technique that will make it possible to produce full-color 3-D prototypes of computerized designs.

"There is nothing like an actual model that you can hold [in your] hand and pass around," said Kinzie, who is also the research and development director at Landfoam Topographics. "With color, it can convey an incredible amount of information."

Kinzie's patent covers a process of coating each sheet with toner and bonder before it is cut with the laser. Colored toner is applied only to the surface of the sheet material; the color is transmitted by diffusion or absorption to the sheet material's edges.

Kinzie said his technique could be used in 3-D computer printers and copiers that could turn out 3-D prototypes from computerized designs as easily as modern photocopiers produce duplicates of paper documents. The 3-D printer would also operate much like a copier to selectively place toner and bonder on individual sheets of material. Additional technology beyond that of copiers would be needed to stack the individual sheets in perfect alignment and fuse them together.

The first systems will initially be limited to producing black and white models, Kinzie said. Eventually, they will be able to create "photorealistic" models with 500 dot/in. of color, he said.

The inventor has no plans to manufacture the 3-D printers and copiers but said he hopes to interest a copier manufacturer in his technique.

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EDITORIAL

Open competition

Open, locks,
Whoever knocks!
— William Shakespeare, *Macbeth*

Openness as it relates to information systems is like a 75-degree cloudless day in May. Everyone agrees it's good.

It can be argued that there is not a more important concept in the 1990s than open systems. Without getting into a discussion of what open systems means (see opposite page for that debate), we can safely say what open systems is supposed to do for customers. And that is to unhinge them from proprietary, relatively expensive solutions historically offered by the vendor community without sacrificing the tremendous performance advantages and *robusto* that closed systems have provided and, to some extent, still do.

Rest assured that the path to openness will be anything but smooth or quick. The reason is that unlike standards, which are set by customers, openness is determined largely by vendors.

There is not a lot of agreement between Bill Gates and Scott McNealy. This is not a small point, given that these men arguably are among the half-dozen or so most influential people in the computer industry. In regard to open systems, they just might be the two most influential individuals.

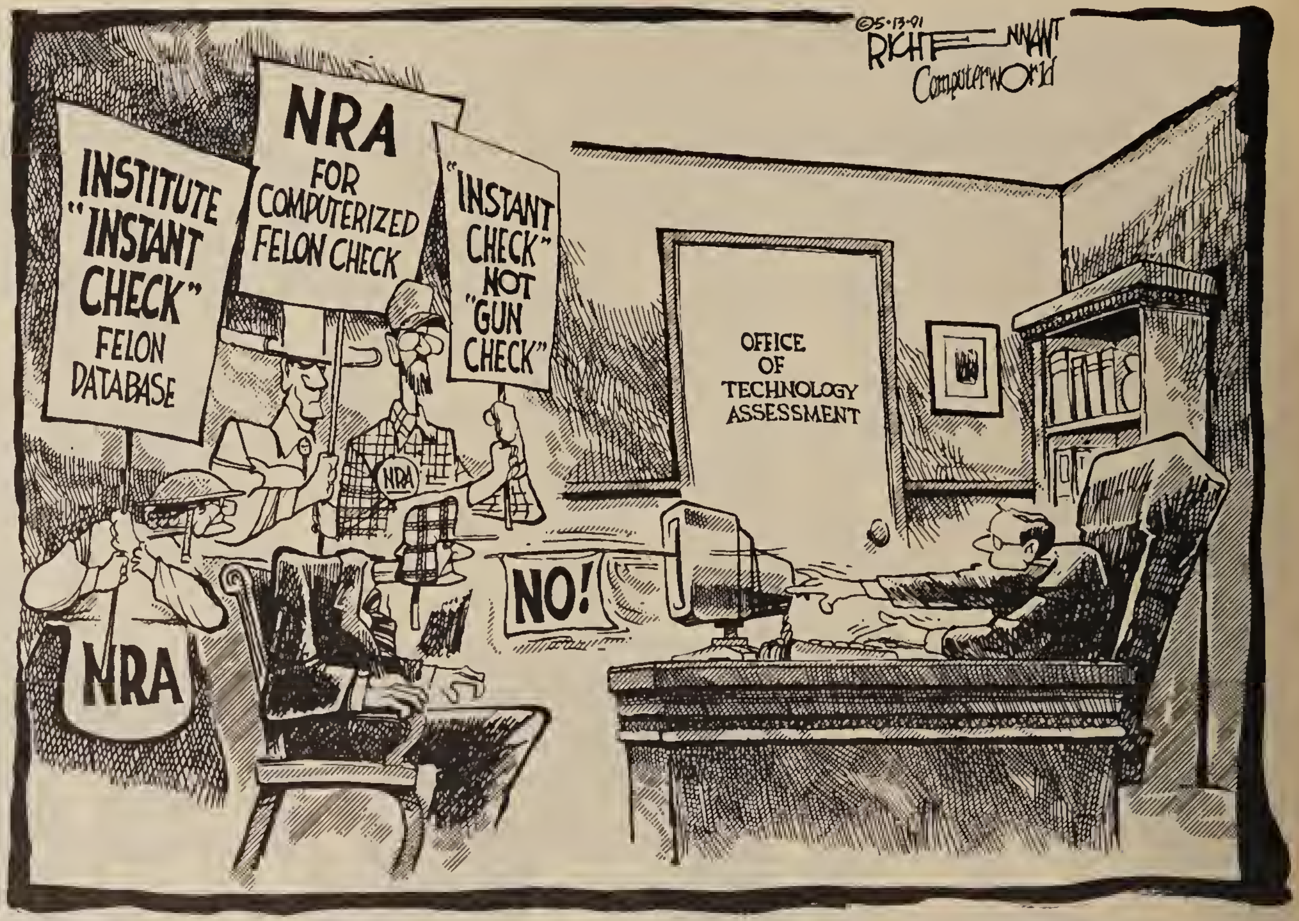
In McNealy's open world, a product such as Windows would essentially become part of the public domain, with open interface specifications available at low cost or no cost and with different implementations available from different vendors.

While we've suggested here that Microsoft conform to some open practices exhibited by independent standards groups, it will be an icy day at the equator before Microsoft goes as far as McNealy suggests, notwithstanding the ongoing Federal Trade Commission investigation into Microsoft's competitive practices.

Gates' vision of open systems has little regard for Unix in its many and disparate versions (which do look pretty proprietary after a while). But neither Sun nor Microsoft have done a whole lot to bring unity to Unix, nor is it in their best interests or necessarily those of their customers to do so.

If there is a single point of confluence in both camps, it is in the belief that open systems, however defined, yields choice not only for the customer but for thousands of third-party developers of software and peripherals. That's easy to agree on, but whose vision provides the broadest menu of choice?

The answer is neither, as they are both predicated on self-interests. And before anyone gets the wrong idea, be it known to all present that in their pursuit of self-interest, both Microsoft and Sun and their CEOs have provided the kinds of choices that are the true manifold expression of the one "open" that really matters — open competition.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LETTERS TO THE EDITOR

Imperfect survey

Your Buyers' Scorecard on PC Cobol [CW, March 25] was the first PC Cobol presentation in a long time that was well-conceived. The "key ratings" were germane to the topic. The survey seemed well-conducted and thorough.

The unfortunate part is that you couldn't include the other two Cobol compiler vendors who make up the remaining 10% of the PC Cobol market: Mbp and Acucobol. Having done this, *Computerworld* would have presented a comprehensive analysis of the entire PC Cobol industry.

Your readership and the business community at large would have benefited from a more useful and valuable Product Spotlight. In addition, you may have discovered a Cobol compiler that would generate still better ratings.

It's too bad when only the big guys can play.

Michael L. Hicks
Vice president
Mbp Software and Systems
Technology, Inc.
Alameda, Calif.

Little guys lose out

In "Military sees problems, promise in viral strikes" [CW, April 8], Michael Alexander unknowingly exposed a means by which small business gets shafted by big government and its friends. He mentioned Sparta, Inc. as having received two Small Business Innovation Research (SBIR) awards.

In 1988, Sparta's revenues were $55,335,000 and growing, according to its annual report. It qualifies as a small business because it has less than 600 employees. Sparta took a double share of the SBIR available funding.

Is this fair? Mr. Cheney is closing bases across the nation. Defense contractors are laying off workers. Minority-owned businesses cannot achieve their fair share of defense contracts as mandated by Congress. Women-owned business enterprises are forgotten.

Yet a company with revenue about 500 times larger than the truly average small business can, within the rules, take away the few crumbs provided to small business.

Sparta used the rules to its advantage. Bad rules can be manipulated if you know the federal acquisition regulations. Mr. Alexander indicated that Sparta stands to obtain $1,000,000 in Phase 2 SBIR funds.

Congratulations, Sparta. Regrets to small business.

Thomas V. Sobczak
Application Configured
Computers, Inc.
Baldwin, N.Y.

Credit the fax

Regarding Mitch Betts' column titled "Catch a ride on the fax wave" [CW, April 8], I found the statements regarding MIS "resisting fax" to be quite contrary to our view of fax systems. At Victor Products, fax systems were under the control of information services for a number of years.

A few years ago, fax systems became a commodity. Everyone had one for sale, and they all were compatible. When we had executives purchasing home fax machines, it was time for information systems to get out of the business and move on. We did move on — to more important issues.

We are now finding that fax is back and filling an important need for electronic data interchange communications. We have designed and implemented a transparent fax gateway system from our PC LAN as well as our manufacturing system. We found that departments had fallen in love with the fax system capabilities but were wasting time pushing paper — which was printed on computer system printers — into fax machines.

The second area in which the fax gateway paid off was communications with our foreign affiliates. We developed a system to allow our affiliates direct dial into our DEC VAX systems and network. The affiliate then downloads the compressed file with the use of Xmodem, Kermit or other file-transfer systems — including dial-up Decnet.

We opted to use the fax gateway, tied to the DEC VMS mail package to notify them that files needed to be transferred. Thanks to the fax gateway, I was well-prepared.

Keep up the good work.

Warren Smith
Manager, Information Services
Victor Products Division
Dana Corp.
Lisle, Ill.

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What does 'open systems' really mean?

Giving customers the chance to vote on a roster of choices

BY BILL GATES

"Open system" is a term that we at Microsoft feel has a very simple definition: customer choice. Customers are able to choose their products and solutions from a host of hardware and software vendors.

To create this level of choice, there must be a small set of standards, widely accepted by both software and hardware vendors, and the technology to implement the standards must be available equally and easily to any vendor.

An open system means that users are not limited to a single hardware system provided by a single vendor or a very limited set of vendors. Users do not want to have the same hardware vendor providing a unique operating system implementation, acting as the primary source of peripherals or offering the bulk of the applications software, as has been the case with proprietary mainframe and minicomputer systems.

Users do not want to be locked in, but they do want standards. They want the economics that come from buying in quantity, and they want the same applications on all their machines.

This is not contradictory. The personal computer industry shows how this can be accomplished with great benefits to the user. The microprocessor architecture and operating system are the same on PCs, but this binary standard is available through an open marketplace of hardware manufacturers. These manufacturers compete on performance, features, price and service. Competition is fierce, but users buy in quantity. The growth brings in more software developers, so more applications are available, which attracts more customers and sells more machines.

The DOS market is a widely hailed self-reinforcing phenomenon that now encompasses more than 60 million machines and is growing at a rate in excess of 20 million systems per year. The DOS — and now Windows — market has developed to include more than 400 hardware manufacturers, at least as many providers of add-on equipment, thousands of software vendors and more than 10,000 actual applications.

This is choice

Competition on a single standard is the crux. If a customer is unhappy with a hardware or software vendor, any number of alternatives are only a phone call away. This is choice. This is an open system.

Standards are generally created in an evolutionary way. Whether based on input from customers, industry groups or committees, new standards are continually created and old ones updated. Truly open systems benefit from this evolutionary process. The real winners, of course, are the customers because they gain the ability to choose.

Unix is often promoted by its vendors as an open system, but there is no single version of Unix. Our own version, originally developed in 1981 and now developed and marketed by The Santa Cruz Operation (SCO), remains the most popular Unix by unit volume. But even we have to admit that the market is fragmented among competing hardware designs and not-quite-identical Unixes.

To compete with Windows, Unix needs a standard graphical user interface. This is crucial in getting developers. As we learned with Windows 3.0, critical mass is everything.

Among Unix vendors, there is no unanimity about what an open system is. There are still two major competing camps — the Open Software Foundation and Unix Systems Labs — and dozens of competing and incompatible implementations. Despite these iterations, Unix is still owned and controlled by a single company, AT&T. The five largest vendors — Microsoft/SCO, IBM, DEC, Sun and Hewlett-Packard — have significantly different offerings, and they largely disagree as to whether their competitors' systems are truly open.

Gordon Studer

PC futures

The recent Advanced Computing Environment (ACE) initiative of 18 hardware manufacturers and key software vendors, including Microsoft, is a good example of how the DOS/Windows approach to open systems can be leveraged by allowing the huge wealth of PC applications to be moved to a new platform. ACE is a cooperative agreement to establish an open hardware and software platform for RISC-based personal computers (using Mips Computer Systems chips) compatible with Intel-based PCs. The two software platforms are Microsoft's advanced operating system (OS/2 Version 3.0) and SCO's unified Unix (Opendesktop).

Microsoft's advanced system will incorporate DOS, Windows and OS/2 in a single environment. Thousands of existing DOS and Windows applications can be up and running on these new machines much, much faster than they could be moved to other systems — increasing choices for customers once again.

This is the latest example of how an open system really works. Because it's customer-driven, all vendors — hardware, systems software, applications software — are driven to get better every day. When hardware advances, the entire environment can be carried over as a whole, and users benefit again.

This is the PC legacy. It's the best kind of open system — it's one that customers vote on every day, day after day, year after year.

Gates is chairman and chief executive officer of Microsoft Corp.

Sharing the basics, so customers get no-risk innovation

BY SCOTT D. MCNEALY

In recent years, most companies that built their fortunes on single-vendor proprietary computing strategies have jumped on the open systems bandwagon. And why not? They've heard the market. Customers are voting for open systems with their wallets. In droves.

However, while the demand for open systems is clear, the meaning of the term isn't — at least, not anymore. Most proprietary companies singing the open systems theme song these days sound suspiciously like they're crooning Sinatra's "My Way" in the background.

"Open" is the most used and abused word in computing today. It's become an all-purpose marketing buzzword.

Some common misuses include:

- "My computer architecture is open because I can network to and get files from the mainframe." This confuses interoperability and portability with openness.
- "My computer is open because it uses Unix." This confuses ease of software portability with openness and doesn't even begin to cover all the other hardware and software interfaces developed by a vendor.
- "My personal computer is open because it runs binary-compatible software from one PC vendor to another." This confuses openness with compatibility and compatibility with logos. A PC clone is still an Intel/Microsoft computer, no matter what distribution channel you buy it from or what logo you put on it.
- " My computer complies with standards because it conforms with the XYZ consortium." This confuses openness with standards and standards with press releases from endorsement bodies.

Misused but worthwhile

"Open" is a term worth saving, though. It says a lot about the way computer companies can and should compete and about the value provided customers through innovation. The theory behind openness is that all technology can benefit from improvement and that all customers benefit from such innovation. Ultimately, the industry benefits too, as a result of increased demand brought about by more useful products.

Basically, openness is a simple concept. It refers to a specification, a blueprint or, as we call it in the computer business, an interface — one that's written down for the world to see and use, one that invites improvement and innovation. In the auto industry, the brake pedal is an open interface. Car companies don't pay royalties to use the specification; they all use it freely as the basis for competitive improvements such as antilock braking systems, hydraulic brakes or disk brakes. And because it *is* an open interface, customers don't have to relearn how to drive.

In the computer industry, interfaces describe many of the important elements that tie a computer system together — the microprocessor architecture, the system bus, the operating system, the window system, the graphical user interface and the important application binary interfaces and application programming interfaces.

The fundamental premise in defining openness is a positive answer to the simple question: Can this technology benefit from innovation and from being faster, more full-functioned and cheaper? Apply the question to an actual case — Microsoft's Windows. Could Windows improve through innovation? Everything I've heard in the market says so. But while Microsoft gives developers the information to create applications that run with Windows, the company does not provide the information to innovate on Windows itself. As a result, Windows is a proprietary (not open) interface.

Simple tests

Following is a simple checklist of criteria for openness:

- The interface should have a specification that's openly available (meaning published). This allows other vendors to create their own value-added implementations.
- The interface specification should be well-written — clear enough so that, if you sent four or 400 engineers into a room with it, they'd come out with a reasonable implementation.
- An open interface should be inexpensive or free — no huge royalties.
- The interface should be legally clean, meaning you can't be sued for using it.
- Multiple implementations of the interface should be available from multiple companies.
- There should be a reference implementation available for a reasonable fee.
- In a best-case scenario, there would also be an independent branding and compatibility testing organization to ensure the specification is protected and enhanced in an equitable way.

Many vendors equate open systems with standards. However, these are not the same thing. The dictionary definition states that a standard is "regularly or widely used . . . the preferred way of doing things." Standard interfaces are set by high-volume sales (in other words, by users). Of course, Sun's philosophy is that a robust open interface will be adopted by many vendors and users, eventually achieving the volume to become a standard.

We're talking freedom of choice here, not freedom *from* choice. It's a scary notion to many companies in the computer business. That's why they try so hard to obfuscate the facts.

McNealy is president and chief executive officer of Sun Microsystems, Inc.

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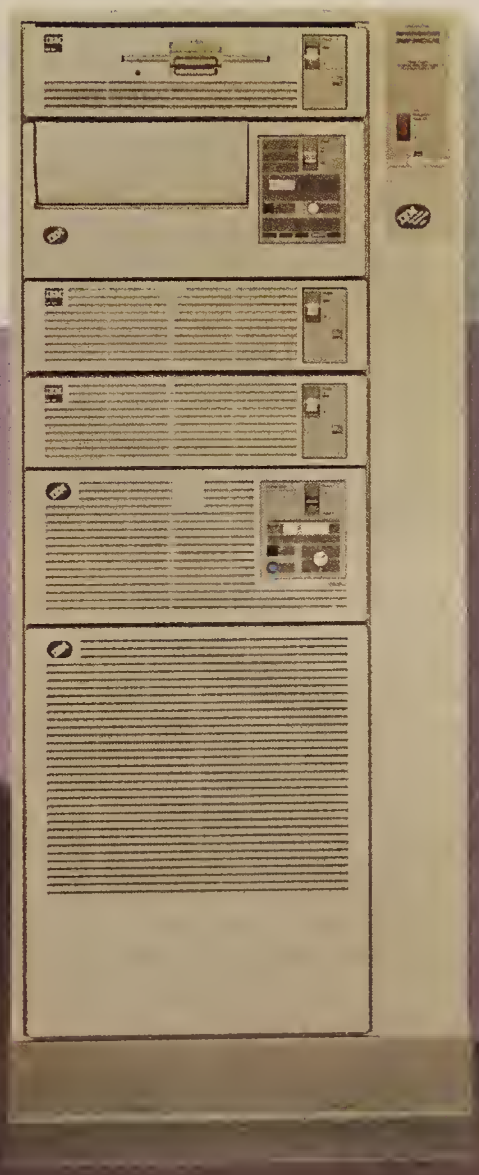

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Rating		Vendor A	Vendor B	Vendor C	Vendor D	BMC
Low	1	27	0	3	0	**0**
	2	39	4	3	19	**0**
Average	3	27	48	38	52	**10**
	4	4	40	48	19	**63**
High	5	4	8	7	10	**27**
Total Respondents		49	25	29	21	**30**

Service: Percentage of Users Responding by Vendor and Rating

Rating		Vendor A	Vendor B	Vendor C	Vendor D	BMC
Low	1	42	4	0	0	**0**
	2	28	0	11	25	**7**
Average	3	24	61	36	55	**21**
	4	6	26	50	10	**50**
High	5	0	9	4	10	**21**
Total Respondents		50	23	28	20	**28**

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COMMENTARY

J. A. Savage

Software joyriding

In January, I bought an old sports car. It sounded good, and it looked good. It's a 1976 Alfa Romeo. But it's a lemon.

I thought I could sell it, but being terminally honest, I can't sell it to anyone for anything but parts. That means it's not worth much. Now that spring is here, I figure the only way to make back any money on my rolling piece of citrus is to use it as a taxi. Take the top down and offer rides. That way, I sell something, but I still have everything I started out with.

In the profits crunch of open systems, where formerly expensive hardware now goes to the lowest bidder, vendors are trying to find new ways of making money. Hewlett-Packard, for one, is treating its systems software divisions like taxis: You can take a ride or license the stuff, but HP still has all the original parts it began with to license again.

A HALF-DOZEN SOFTWARE vendors are licensing parts of HP's CASE software to incorporate into their own products.

About the time I bought my Alfa, I talked with Bob Frankenberg, who was then head of software at HP. He said the company planned to increase software licensing revenue from 10% to 30% within the next three years. Ever since then, there's been a steady stream of press releases from HP announcing this, that and the other licensing agreement for its systems software.

For instance, IBM (which is well-known for its solitary enthusiasm for its own systems software) has recently licensed parts of HP's network management software as well as its CASE framework. A half-dozen software vendors are licensing parts of HP's CASE software to incorporate into their own

Continued on page 33

Specmarks lose their luster

The once-promising benchmark is catching some new flak from critics

BY J. A. SAVAGE
CW STAFF

Specmarks, a benchmark that vendors hoped would remain noble and untainted, have lived long enough to be maligned.

The widely used benchmark, which measures CPU speed on workstations, is under growing criticism as the same vendors who developed it jazz up their ratings with software not yet commercially available.

Specmarks arose because for the last few years, vendors have largely denigrated the million instructions per second (MIPS) benchmark. In the last year, for instance, some workstation vendors have refused to even provide a MIPS rating for their workstations.

Private compilers

Recently, both Hewlett-Packard Co. and Sun Microsystems, Inc. have released Specmarks boosted by using compilers not available to the general public at the time products were announced.

However, Specmarks are also coming into increasing disfavor now, said Tom Kucharvy, an analyst at Summit Strategies, Inc. in Boston. "At first, they were thought to provide an objective means of benchmarking that couldn't be manipulated like MIPS can. But now that people are becoming familiar with them, they are being manipulated."

When HP announced its HP 9000 Series 700 workstations in March, the company said the machines topped out at 72.2 Specmarks.

That number, however, was obtained by using an optimizing compiler that will not be available until June, at which time it will be sent automatically to customers that have bought the workstations, according to an HP spokesman.

In November 1990, Sun introduced its Sparcstation 2 with a Specmark rating of 21. It was also using an unreleased compiler that was not made available until last month, according to a Sun spokesman. Sun sells compilers separately.

Spokesmen from both companies said customers were warned that their performance would vary because some software was not available immediately, although the degree of variance was not made clear in the companies' marketing material.

Even the former chairman of the Systems Performance Evaluation Council (SPEC), Robert Novak, who is also manager of Mips Computer Systems, Inc.'s performance group, acknowledged that there are "some problems" with the benchmark. "Various vendors have found pieces of code they can optimize," he said.

In the future, SPEC plans on updating its benchmarks often enough to keep ahead of vendors' ability to optimize it for themselves, he added.

More information

Because Specmarks in effect measure MIPS and million floating-point operations per second (MFLOPS), at least one analyst claimed that users are getting no more information from Specmarks than they would if they just relied on the older MIPS and MFLOPS benchmarks.

Lloyd Nirenberg, president of Competition Technology Corp. in Campbell, Calif., has an equation that adds MIPS and MFLOPS with a constant number and comes quite close to landing on the Specmark benchmarks for 19 workstations.

"Vendors have no need to be so contentious of MIPS and MFLOPS; they sneer at everyone as if [Specmarks] are something new," Nirenberg said.

Some independent analysts tend to agree with Nirenberg. "Either SPEC picked the wrong benchmarks, or no matter what CPU-intensive benchmarks you pick, they won't tell you much more than MIPS plus MFLOPS — however loosely derived," said Omri Serlin, president of Itom International, Inc. in Los Altos, Calif.

AS/400 takes its place at head of the SAA line

BY MARYFRAN JOHNSON
CW STAFF

IBM's Application System/400 has finally secured itself a prominent place under the distant sun of Systems Application Architecture (SAA), the grand scheme for unifying the IBM product line and eventually playing in a multivendor environment.

With the announcement last month that certain distributed relational database capabilities will appear first on the AS/400 platform, IBM sent a much-welcomed signal to customers struggling to cope with growing networks of diverse computers.

"IBM didn't provide a lot, but they announced a lot of direction," said Douglas Plescia, vice president of information systems at Toyota Motor Sales U.S.A., Inc. in Torrance, Calif. "We're encouraged that they're recognizing the issue."

"This was a blockbuster announcement for the AS/400 and the SAA database," said George Zagelow, manager of architecture and standards at IBM's laboratory in Santa Teresa, Calif. "When the AS/400 delivers the distributed relational database, it will leapfrog completely across homogeneous protocols right into heterogeneous solutions."

In this case, a homogeneous protocol refers to a pair of like databases talking to each other — DB2 to DB2, for example — while a heterogeneous protocol means the SQL/400 database will be able to exchange data and files with the DB2 database under MVS, SQL/DS under VM or OS/2 Extended Edition Database Manager on Personal System/2 workstations.

The springboard for this leap is Distributed Relational Data Architecture (DRDA). The first piece of DRDA will be generally available on OS/400 in March 1992, allowing applications to execute multiple SQL requests to other IBM databases that support DRDA.

"What DRDA really talks about and defines is what flows on the wires between the machines," Zagelow explained. "It is a set of rules that resolves things like naming inconsistencies across various environments. If your product can put the right bits in the right sequence on the wire, it can play."

The other SAA operating systems — MVS, VM and OS/2 — are also "well on their way" to providing distributed database capabilities under DRDA, Zagelow added, but only the AS/400 has announced a product availability date.

SQL failings

One of the major problems the AS/400 faced in catching up to the other SAA platforms was its weak SQL capabilities, Zagelow noted.

The debut of OS/400 Version 2.0 next month, however, will fill in many of those missing SQL functions, such as common return codes, numeric data types and variable length fields. "As the AS/400 strengthens its support for SAA/SQL, applications written on System/370 or OS/2 in the SAA languages become easier and easier to move to the AS/400," Zagelow said.

Under the SAA distributed database, there are four types of requests: remote request, remote unit of work, distributed request and distributed unit of work. When the first piece of DRDA shows up next year, it will

Continued on page 32

New and improved

In March 1992, IBM will deliver the second release of OS/400 Version 2.0, with significant improvements in the AS/400's SAA functions. The following are among them:

- Support for the first stage of DRDA, which allows an application to execute multiple SQL requests as remote units of work to a single, remote IBM SAA relational database system.
- Greater consistency in SQL to allow applications to access data anywhere in the network.
- Enhancement of the AS/400's Common User Access interface through extensions to Data Description Specification (DDS) support. New keywords in DDS will allow developers to create applications with pop-up windows for Help text.

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NEW DEALS

D&B scores contracts

Dun & Bradstreet Software, a company of The Dun & Bradstreet Corp., recently scored two substantial contracts with its General Ledger software system.

One was with San Francisco-based **Pacific Gas & Electric Co.**, which awarded a $750,000 contract to D&B. The agreement calls for the license and installation of D&B's General Ledger software at the utility company to replace the existing in-house-developed General Ledger system. The software is valued at $500,000, with the remainder of the contract covering several additional services.

Lockheed Aeromod Center, Inc., an aircraft maintenance services subsidiary of Lockheed Corp., signed a $1 million contract with D&B Software for the General Ledger system and related professional services. The software will be used to track direct and indirect expenses and determine project-specific revenue figures.

Consolidated Edison Company of New York, Inc. has selected **Intergraph Corp.** in Huntsville, Ala., to supply an automated mapping and facilities management system. Intergraph will provide Con Edison with approximately 200 Intergraph Series 6000 and 2000 Unix workstations and related hardware, software, training and maintenance services. The contract is valued at $12.6 million.

The Defense Systems Division of Loral Corp. has selected **Concurrent Computer Corp.**'s 7000 Series of Motorola, Inc. 68040-based real-time Unix systems for the real-time computer portion of the Special Operations Force Aircrew Training System (SOF ATS). To date, the SOF ATS program is the largest aircrew training system program awarded by the U.S. Air Force. Concurrent expects the value of the contract to exceed $1 million, excluding maintenance and support.

Chaparral suite talks way on to message bus

ON SITE

BY CAROL HILDEBRAND
CW STAFF

MIDLOTHIAN, Texas — When Chaparral Steel Co. began dividing its product processing system into server functions, it found that to keep communications among machines up to date, it needed a good valet: something dependable and discreet that guaranteed the job would get done.

Chaparral, which operates a minimill here, produces its product from scrap using electric furnaces. According to Scot Shepherd, manager of system software at the company, efforts to build guaranteed data delivery among its Digital Equipment Corp. VAXs, which are scattered throughout the factory, led Chaparral to Suitetalk, a "message bus" for client/ server computing from Suite Software in Dallas.

The company uses a cluster of VAX 6520s, a cluster of 8550s and 8530s as well as two Microvaxes to run the product processing system, which covers everything from order entry through shipping. The VAXs are linked via Ethernet.

According to Shepherd, they took the server approach to improve application speeds. Chaparral uses DEC's RDB relational database management system and had developed a system using Smartstar, a fourth-generation language tool from Smartstar Corp., a part of Signal Technologies. Shepherd said that rather than rewriting the system, Chaparral decided to separate the back-end database activity into the server process. Thus, he said, "we needed a way to communicate between the front-end process that a user deals with and the back-end one, but in a fail-safe manner."

Shepherd said the firm found out about Suitetalk through a Suite Software consultant who works on-site as an RDBMS specialist.

The staff had already spent several weeks writing an in-house program handle message delivery for the first application, a print server. "It worked," Shepherd said, "but if something happened to the message — a buffer was full or a printer went down — the information could just get lost or dropped. Some things would end up just not getting printed out."

Chaparral Steel *uses a 'message bus' for its client/server system*

Shepherd said that Suitetalk's guaranteed message delivery was a strong drawing card, especially when the company used the server approach for the database updating function. "We couldn't afford to think that we're doing something and not have that transaction take place in the database."

What the firm discovered with Suitetalk, he said, is that not only did it take care of the problem more efficiently, "it will confirm back to the sender that the data was in fact sent or received or is pending in the receiving queue or whatever. When it finally does get delivered, you will get confirmation."

According to Shepherd, that feature helped erase his uncomfortable scenario of people printing invoices that did not reflect what was in the database.

The alternatives were slim pickings, Shepherd said. Other than the homegrown approach, he said, Chaparral looked at a product called Digital Message Queue, from DEC. "But it was as much a consultant service as a product," he said.

Shepherd said he discovered several ways to use the product. The company also uses it to help the production system in the mill talk to the VAXs and get that information into the database. It is also used to monitor database lock.

Taking the wait out of rehab services

BY SALLY CUSACK
CW STAFF

FRANKFURT, Ky. — Try telling an accident victim that he has an "indefinite" wait for vocational rehabilitation services while the paperwork is being processed.

Scenarios such as this prompted the Kentucky Department of Vocational Rehabilitation to automate client service functions in centers across the state to better serve its 15,000 active clients.

The department also hopes to expedite processing on a waiting list of 9,000 applicants.

Robert Beverly, division director of support services at the Cabinet for Workforce Development, credited the installation of Bull HN Information Systems, Inc. DPS 6 Plus minicomputers at 16 district offices throughout the state with "cutting six days' turnaround time off the application process."

The minicomputers, each equipped with 16M bytes of memory, connect via dumb terminals to a Bull DPS 8/49 at the headquarters here over the state of Kentucky's proprietary network.

There are 41 remote offices throughout the state, and each connects to one of the 16 district centers with direct or dial-up lines.

Prior to putting minis in the field, all information was documented by counselors at individual offices and mailed to headquarters, Beverly said. Once received in Frankfurt, the information was reviewed and then authorized for keypunch into a Honeywell Bull system running in a batch processing environment.

Batch programs are now run from the district offices on a nightly basis, Beverly said, and the process takes about one hour.

There is a DPS 6 Model 95 at the main data center for front-end editing programs, and the data is stored in files before transfer to the mainframe.

In addition to reporting to the central office in Frankfurt, each district office is responsible for maintaining its own client files for day-to-day record keeping and client program management.

The Department of Vocational Rehabilitation is an agency of the Kentucky Cabinet for Workforce Development and was established to provide adults with all kinds of rehabilitation. This includes services for victims of automobile accidents, drug dependency, broken home environments, paralysis and learning disabilities.

"We provide any type of training necessary to get these people back on track," Beverly said.

To accomplish this, the department must maintain extensive database files of medical, vendor-related and other rehabilitation information.

In addition, the federal government mandates that the state tabulate, process and coordinate detailed client data, such as complete hospitalization information and family history.

All client data and related information is stored on Bull's DM-IV database software, which resides on the DPS 8000 mainframe.

"The software was the real challenge," Beverly said. "We designed our screens to match the government forms from A to Z, and the federal requirements change on a monthly basis. We are always changing our menus and screens."

When the department decided to automate its field offices two years ago, Bull agreed to work with the staff on software applications development, Beverly said. The primary objective in developing the Cobol-based programs was to ensure easy configurability.

The software was developed on a Bull DPS 6 platform using Bull's proprietary operating system and office products software.

The system went into full production mode last August, and, according to Beverly, the final field installation will be completed this month.

Future unlimited

While there are currently only 10 personal computers used in the field, Beverly said he sees an unlimited future for them — especially laptops.

"Very often counselors must go to client homes. It would be convenient if all the information could be entered directly onto a PC," he said.

Beverly said the department is satisfied with Bull's service and support and would most likely purchase laptops from Zenith Data Systems Corp., a wholly owned Bull subsidiary.

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AS/400

FROM PAGE 25

handle only the first two remote types, allowing users to send a single SQL request out to execute on another system and then return the answer.

A distributed request, on the other hand, would enable users to send that single SQL request out to a network, updating several systems rather than just one. However, IBM is unlikely to pull that off until 1993 or 1994, analysts said.

Zagelow maintained that "a significant number of customers" will be satisfied with the remote access because it will allow them vertical connectivity across their environments. "Customers can do single-site updating, like writing an application in one place that populates a table somewhere else," he explained.

"Ultimately, you should be able to do remote work on DB2 from a PS/2 or an AS/400, with one request able to update all the others," said Jim Louys, an analyst at ADM, Inc., an AS/400 consulting firm in Cheshire, Conn. "Most AS/400 customers won't care about DRDA now, but those who will care have multiples of AS/400s."

At Toyota Motor Sales, for example, the data center in Torrance does all the data processing for Toyota and its affiliates, while more than 200 AS/400s serve as primary distribution systems for the car dealerships. The auto parts database and national car information database reside on the corporate 3090 mainframe under DB2.

"The concept of full support for SAA on the AS/400 is terrific. We always felt it would be a significant platform," Plescia said.

"We really are committed to a cooperative environment where we can maintain all the corporate databases at the central facility and provide portions of that database for use locally."

The company intends to grow its AS/400 network to "well over 1,000" within the next decade, according to Plescia. "In a distributed corporation like ours, trying to support dealers across the nation, you can't do all the things you need from a central host," he said.

Image booster

Among the more interesting components of the recent AS/400 Model D announcements was IBM's introduction of a 5¼-in. write-once read-many optical drive.

Analysts said the IBM 3995 Compact Optical Library Dataserver finally gives IBM access to small to midsize imaging systems customers. The $52,000 introductory Model 042 jukebox can store an unformatted 20G bytes, the equivalent of the digitized images of 300,000 pieces of paper.

"It's the first IBM-logoed, 5¼-in. jukebox for any platform," said Walter B. Novinger, vice president of the Image Systems Division at Rothchild Consultants in San Francisco. Users have been "clamoring" for this capability, he added. Up to 14 Model 042s can be attached to an AS/400 9406 Model D; two other models were announced for the System/370 and System/390 architectures.

In another move to attract developers, IBM broke out a subset of application programming interfaces from its Workfolder Application Facility, a module to image-enable RPG and Cobol applications.

"This subset is what the software developers have said they really needed," Novinger said. "Now they can image-enable applications much less expensively. It's a very welcome announcement for the AS/400."

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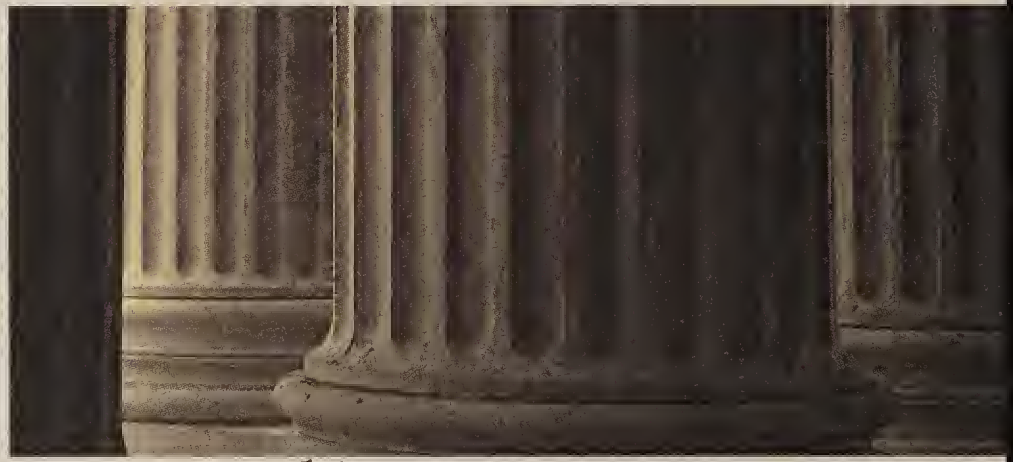

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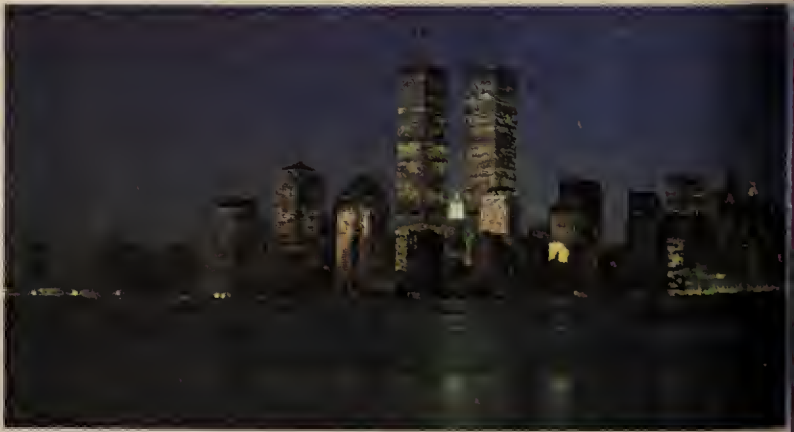

Passport moves changes across databases

Programmers can now link RDBMS applications to multiple databases

BY JEAN S. BOZMAN
CW STAFF

RONKONKOMA, N.Y. — Insync Software Corp., a small Long Island, N.Y., software firm that sells the Passport fourth-generation language for relational database management applications, announced that it has found a way to update multiple databases made by different vendors from a single application screen.

Passport Interconnect, a new product that began shipping May 1, allows programmers to link a single relational database management system application to multiple databases over a corporate network.

"A lot of people want to move their software tools from one RDBMS to another," said Insync President and founder Alan Tonnesen. "We're saying that you can link multiple RDBMSs together and share the data among them all."

The interconnect products, which range in price from $4,000 for a Unix workstation to $70,000 for a Digital Equipment Corp. VAX 9000, can be used to create new distributed database applications, according to Tonnesen. Separate pieces of software must be installed on each of the linked RDBMSs, however.

Passport applications run on RDBMSs from Oracle Corp., Sybase, Inc. and Ask Computer Systems, Inc.'s Ingres Division as well as with DEC's RDB.

The firm has said Passport Release 5.3 would allow simultaneous access and two-phase commit transactions among any of the four supported RDBMSs, according to Gartner Group, Inc., a market research firm based in Stamford, Conn.

New use for old product

Users can also build Passport applications using an older product, Insync's SQL*Forms Connect. That product links an Oracle SQL*Forms application with RDBMSs from Sybase, Ingres and DEC. The older product had required that applications be customized for each target database.

Several Insync users said they are interested in the new product but have not yet seen it. "We use Passport as a front end for all our data-entry screens," said one user who manages a large-scale Oracle database at a New York investment house. "But, right now, we're an all-Oracle shop."

Insync, with 15 employees, was founded in 1988 by Tonnesen, who formerly worked for Fortex Corp.

Savage

FROM PAGE 25

products. At an applications level, HP said it would offer its CASE software on Sun's workstations — yet another form of income.

Companies such as NCR have licensed HP's object-oriented PC software, New Wave, to incorporate into their own bundled software offerings. Archrivals HP and Sun have even gotten together to promote object-oriented management code as an underpinning of new object-oriented software. If accepted by the object-oriented standards group, it could bring in more licensing fees.

Moreover, all of this joyriding on systems software revenue is not limited to HP. Sun, too, is getting into the software business. (In Sun's case, I guess that would be Bill Joyriding.) This summer, a Sun subsidiary called Sunsoft will be actively licensing Sun's offerings on the open market.

In the era of open systems and thus, cheap hardware, HP and Sun seem to be onto something.

Savage is a *Computerworld* West Coast senior correspondent.

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NEW PRODUCTS — HARDWARE

Data storage

Delta Microsystems, Inc. has added several tape backup products to their massive storage device line.

Delta has announced the SS-8500T ($12,495) a 5G-byte, 8mm tape drive with 480K byte/sec. data transfer; the SS-10TS 8mm tape stacker ($28,495 including 10 5G-byte tapes and software); and the SS-116TJ tape jukebox, which costs $122,980 including four 5G-byte drives and capacity for up to 116 tapes.

The firm also announced Databanker ($150,000), an automatic backup and retrieval program that can back up all Unix-based machines on a network through a Sun Microsystems, Inc. server.

Delta Microsystems
5039 Preston Ave.
Livermore, Calif. 94550
(415) 449-6881

Processors

The Real/Star series of reduced instruction set computing systems has been added to Modular Computer Systems, Inc.'s (Modcomp) Tri-Dimensional family of real-time computers.

The machines are based on Motorola, Inc. 68000 and 88000 processors and implement Modcomp's Real/IX real-time Unix operating system.

Uniprocessor, symmetrical multiprocessor and asymmetrical multiprocessor systems are available. Pricing ranges from $25,000 to $240,000.

Modcomp
1650 W. McNab Road
Ft. Lauderdale, Fla. 33309
(305) 974-1380

Mercury Computer Systems, Inc. has announced the MC860VS, an embedded VME-card multicomputer with four Intel Corp. 80860 microprocessors.

The product is available for Sun Microsystems, Inc. Sun-3 and Sun-4 and Silicon Graphics, Inc. workstations, as well as for Scalable Processor Architecture computers running Unix or Wind River Systems, Inc. Vxworks. Eight MC860VS cards can be configured together, providing up to 2.5G floating-point operations per second, according to the company.

Pricing begins at $48,600, depending on system memory and quantity purchased.

Mercury Computer Systems
600 Suffolk St.
Lowell, Mass. 01854
(508) 458-3100

SOFTWARE

Database management systems

VM Systems Group, Inc. has announced the immediate availability of DB/Center, a comprehensive management system for SQL/DS databases in the VM operating environment.

The product monitors database performance, manipulates data objects and includes reporting and applications-building facilities.

DB/Center pricing ranges from $15,000 to $55,000, depending on IBM processor group.

VMSG
1604 Spring Hill Road
Vienna, Va. 22182
(703) 506-0500

Progress, a fourth-generation language and relational database management system from Progress Software Corp., is now available on all Digital Equipment Corp. hardware platforms.

Progress has added support for ApplicationDEC 433 workstations, the company announced. The product is designed for distributed, mixed-platform environments and is portable across numerous network types, operating systems and databases, according to Progress Software.

Pricing for the complete development version running on the ApplicationDEC 433 platform ranges from $7,600 to $34,400.

Progress Software
5 Oak Park
Bedford, Mass. 01730
(617) 275-4500

Development tools

Cortex Corp. has announced the availability of Corvision Version 4.41. Corvision is an applications development product for Digital Equipment Corp. VAX systems.

Version 4.41 incorporates features such as screen style sheets, real-time data updates and enhanced third-generation language integration. Annual licensing ranges from $40,000 to $325,000.

Cortex
100 Fifth Ave.
Waltham, Mass. 02154
(617) 622-1900

Applications packages

International Business Information Systems (IBIS) has developed Sourcemaster, a source code library management product for MVS environments.

Sourcemaster identifies code according to language, system, group (such as batch- or macro-level CICS) and target (such as macro, object or source).

A perpetual license costs $9,500. IBIS is offering a 30-day free trial period.

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PCs & WORKSTATIONS

COMMENTARY

Jerrold M. Grochow

A better OS/2 than . . .

Thank you, Bill Gates. Knowingly or not, you seem to have given IBM just the kick it needed to produce the OS/2 we should have had all along. To quote Jim Cannavino, general manager of IBM's Entry Systems Division, OS/2 Release 2.0 is "a better Windows than Windows, a better DOS than DOS and a better OS/2 than OS/2 Release 1.3." He not only said it — he proved it.

It will be several months before the average user will be able to get a production copy of OS/2 Release 2.0, but it will be well worth the wait. By now, you probably know that IBM unveiled this product to groups of consultants, end users, the press and independent software developers last month. It was quite a show. I'm not sure anybody expected an OS/2 that would perform reasonably well on an Intel 80386-based machine with 2M bytes of memory running an OS/2 application and a DOS application simultaneously. On a Personal System/2 Model 70 with 6M bytes of memory, OS/2 executed Windows applications faster than the same machine booted with a native version of Windows 3.0.

OS/2 Release 2.0 supports every kind of PC application on the market, right out of the box, without you having to buy

Continued on page 48

Compaq cuts shrink on street

Actual price reductions are only a fraction of those publicized, users say

ANALYSIS

BY RICHARD PASTORE
CW STAFF

Compaq Computer Corp.'s recent pricing overhaul is proving too good to be true. Many users said street-price cuts are only a fraction of the published reductions. So far, the cuts have failed to boost sales substantially, according to dealers.

For the most part, Compaq dealers are not passing the full discount down to their customers because Compaq has made it relatively more expensive for dealers to buy the hardware. To avoid profit erosion, resellers are cutting back on the discounts they give customers — effectively withholding a portion of the manufacturer's publicized reduction.

"They're expecting a walloping discount, and we're unable to give it to them," said Tom Hudspeth, a Compaq dealer at Valcom, Inc. in Wichita, Kan.

Pharmaceutical firm Rhone Poulenc Rorer, Inc. said it is seeing roughly a 15% to 20% street-price reduction on products Compaq reduced on paper by 34%.

Deloitte & Touche in New York reported a 34% to 38% corporate discount on Compaq list prices before the April 16 pricing overhaul. Since then, its discount rate is down to 20% to 25% off the new list prices.

Companies buying equipment in small quantities may see

Continued on page 44

Taking it to the street

*Compaq Computer Corp. customers are realizing smaller price cuts than Compaq advertised because the manufacturer changed dealer price structures**

Sample Compaq LTE 386S/20 notebook computer pricing

Prereduction		Postreduction	
List price:	$7,000	List price:	$4,800
Compaq discount ta dealer:	40%	Campoq discount ta deoler:	30%
Deoler cast:	$4,200	Deoler cost:	$3,360
Deoler discount ta customer:	30%	Morkup odded to dealer cost to mointoin profit morgin:	16%
Dealer profit morgin:	16%	Customer cost:	$3,900
Customer cost:	$4,900		

*Dealer prices are representative but are not actual quotes

CW Chart: Doreen St. John

Mathcad upgrade to offer Windows access

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — Next month, users of Mathsoft, Inc.'s Mathcad application should be able to take advantage of Microsoft Corp.'s Windows 3.0.

Mathsoft, a developer of technical calculation software, said Mathcad 3.0 will also include "electronic handbooks" for instant access to standard formulas and constants, symbolic calculations for computer algebra and other features based on requests from a survey of more than120,000 users.

Mathcad provides a blackboard metaphor for engineers and scientists and is the leader in the technical calculation market, said Tony Picardi, an analyst at International Data Corp. (IDC) in Framingham, Mass.

IDC recently surveyed 535 users of 11 mathematics packages. Mathcad led the pack with purchases by 12% of those interviewed. The closest competitor was Mathematica, which garnered a 5% share.

Only 3% continue to use slide rulers, Picardi added.

Priced at $495, Mathcad 3.0 will take full advantage of Windows, including the dialog boxes, pull-down menus, mouse point-and-click support, extended memory support and context-sensitive Help.

Time-savers

The built-in electronic handbooks are said to save time by providing researchable hypertext access to problem-solving information, which can be put to immediate use in Mathcad applications. Specifically, users can access information from Chemical Rubber Co. (CRC) reference handbooks.

External resources, including paper handbooks, are used by 74% of those surveyed by IDC; 15%, the largest grouping, use the CRC handbooks. Putting them on-line both speeds up the process for the user and takes him by the hand through calculations he may or may not remember how to do, Picardi said.

Support for symbolic calculations, an advanced math function, allows users to select symbolic functions from a Mathcad menu automatically. These are used to simplify formulas, expand or factor polynomials, solve for a variable and differentiate and integrate symbolically.

Other new features will include improved equation editing, enhanced plotting, improved memory support, built-in units and additional numerical functions. Optional Mathcad applications packs are available from Mathsoft and can be used to create customized capabilities for different disciplines.

Investing in Tomorrow's Bottom Line

Micro Focus Workbench Provides Chrysler Corporation with a Competitive Edge

Jerry Barnes, Chrysler Corporation

In the fiercely competitive auto industry, programmers at Chrysler Corporation are using Micro Focus PC-based productivity tools to cut program development time and help move products from the drawing board to the showroom floor faster.

"The bottom line is that our business needs change quickly and we want to streamline the software development process as much as possible so Information Systems can be responsive to all of our operating units," said Jerry Barnes, Chrysler's Manager of Systems Engineering Technology.

Moving application development to a workstation environment allowed Chrysler to use its mainframe resources more efficiently and speed up development cycles by taking advantage of productivity tools not available in the mainframe programming environment. With this solution, programmer productivity improves greatly without a large investment in additional mainframe resources; an important consideration in uncertain economic times.

"The mind-set here a few years ago was, 'why would anyone want to do anything away from the mainframe.' Now, we have over 200 trained COBOL/2 Workbench users."

With the Micro Focus COBOL/2 Workbench, programmers can develop and maintain full-scale CICS/VS and CICS DL/I applications independent of the mainframe in a fraction of the time.

"We quantified the time spent on typical software development activities. We showed how we could make a code change, compile the program, detect an error, correct the error and recompile the program again in less time than it would take someone to logon to the mainframe and submit the first compile. In many cases, the developer would make the change on the PC in two to three minutes, while it could take close to 20 minutes on the mainframe."

Jerry Barnes made his case for Micro Focus COBOL/2 Workbench based on greatly improved productivity. The Micro Focus edit-check-debug cycle, now an industry standard for PC-based programming made a big impact on throughput and costs.

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Std. plotter emulation	✓ Yes	No
Font card slots	✓ 2	1
Std. input paper tray capacity	✓ 200	50
Std. output paper tray capacity	✓ 100	50
Opt. sec. input paper tray capacity	✓ 500	250
Opt. envelope tray capacity	✓ 75	20

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AT&T furnishing wall-to-wall laptops

BY MICHAEL FITZGERALD
CW STAFF

BASKING RIDGE, N.J. — AT&T, hoping to lop 50% off its office leasing costs nationwide, is preparing to replace the four walls of an office with laptop computers for as many as 10,000 of its corporatewide salespeople.

Child's play

To define the information needs of a virtual office, AT&T put 12 people in a room with three sets of Tinker Toys and told them not to come out till they had a model for the architecture.

"It was kind of like an EST experience," commented Roger Dalrymple, manager of information technology at AT&T's Business Network Sales Division.

The approach worked. Four days later, the dirty dozen emerged with an information architecture "that allowed for continuous improvements and maximizing of customer service information," said John Guerra, the division's director of sales. "And that began our journey to what we call the virtual office."

"The vision we had was the application of technology so we could maximize the effectiveness of our sales force while maintaining customer service," said John Guerra, director of sales at AT&T's Business Network Sales Division.

According to Guerra, AT&T decided to look into the virtual office concept to see if it might improve its competitive position: "Our perspective was [that] it was risky not to do something in the marketplace that was dramatic," he said.

AT&T also aimed to address what it saw as a changing sales environment and demonstrate to its customers that it was committed to technology they use, Guerra said.

Two years ago, AT&T began discussing how to implement this vision. After it devised a plan in late 1989 for what it calls "the virtual office," it gave laptops to 2,500 salespeople in the southwest region of its Commercial Markets Group and sent them out into the field.

Late last year, AT&T decided to roll out the project on a nationwide basis.

What made the virtual office concept possible was the breakup of AT&T's telephone monopoly, which forced the firm to reorganize. Over the next four years, it developed a business automation platform centered on IBM and Amdahl Corp. mainframes linked to 25 smaller data centers with AT&T 3B-class minicomputers running AT&T's Unix.

The laptop users, who will standardize on the new laptop from Safari Systems, the AT&T and Marubeni Corp. joint venture, now use Intel Corp. 80286-based laptops from Grid Systems Corp. and Toshiba Corp. and 80386SX-based notebooks from AST Research, Inc.

AT&T is in the process of deciding what software applications will be standard; Microsoft Corp.'s Windows 3.0 will be the operating environment. An in-house product, Terra Nova, handles data communications.

The laptops function as mobile terminals connected to one of these data centers, said Roger Dalrymple, division manager of information technology.

Guerra said AT&T's Commercial Markets salespeople reported productivity gains between 5% and 45%, with a median increase of 15% to 20%.

Flexible technology

AT&T said it plans to implement technology on a flexible basis based on environmental factors. The density of New York will probably mean the area will operate traditionally, but California, with its concern for traffic flow and the environment, may see AT&T sales offices virtually disappear.

AT&T has been working with Indiana University's Just-In-Time Knowledge project to work out the societal and educational issues that face its workers as they move into a virtual office setting.

AT&T treats each office separately and attempts to do the same with each employee, encouraging employees to think about the impact of the concept on their work style and family life.

For those who do work out of the office most of the time, the plan is to keep common office space available.

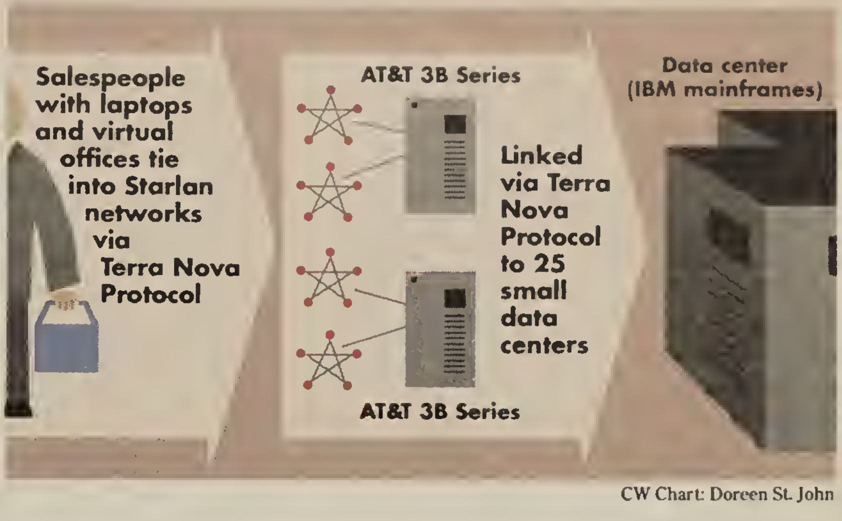
Guerra said AT&T will implement the program "where it makes sense," which means that a significant part of its sales force will have a virtual office.

The Commercial Markets experiment worked well in part because the group was relatively new and expanded rapidly during the experiment's run. More established business units might not be as open to change.

Still, AT&T is committed to the rollout of the project. "This is something that will go on with no time restraint," Guerra said.

Walls tumbling down

Many AT&T salespeople will be virtually without offices when they take laptops on the road and communicate electronically with the corporate world


Salespeople with laptops and virtual offices tie into Starlan networks via Terra Nova Protocol
AT&T 3B Series
AT&T 3B Series
Linked via Terra Nova Protocol to 25 small data centers
Data center (IBM mainframes)

CW Chart: Doreen St. John

Asymetrix boosts Toolbook

BY JAMES DALY
CW STAFF

BELLEVUE, Wash. — Asymetrix Corp. has announced a revamped and speedier version of Toolbook, its object-oriented programming tool kit for Microsoft Corp.'s Windows 3.0 graphical environment.

Toolbook Release 1.5 addresses many of the performance concerns users have voiced about the 1-year-old application, including the need for faster page drawing, sorting and searching. The update offers support for bit-map files of up to 1M byte, the ability to import graphics and increased networking and printing support.

One of the most impressive aspects of the update is an improved Daybook personal organizer that can load, display, sort and search at twice the speed of the sluggish earlier version, Asymetrix President Paul Allen said.

Release 1.5 also includes a utility that helps create three-dimensional buttons and lists box fields and dialog boxes.

Beta-test users said the new features will make Toolbook an important addition to their development environment. "Release 1.5 eliminates all prior excuses for writing complex applications in C," said Keith Crozier, president of Windows developer Intellilink, Inc.

Toolbook 1.5 also features enhanced dynamic link library support that allows users to exhange data between custom Toolbook applications and non-Toolbook applications. Expanded dynamic data exchange (DDE) support also improves performance for applications requiring heavy DDE use.

Toolbook will be available this month for $395, Asymetrix said. The upgrade from Version 1.0 will cost $75. Version 1.5 of the Toolbook Author's Resource Kit, a package of development utilities and applications examples, is slated to be available next month for $450.

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Tool makes databases graphical

BY CHRISTOPHER LINDQUIST
CW STAFF

ATLANTA — Users looking to integrate images with their current database applications may find some help in Quickpix, an image tool created by software firm Powersoft, Inc.

Quickpix reportedly allows users to assign images to database records through the use of "triggers," or keywords, from application screens. When a trigger appears, a terminate-and-stay-resident program locates the proper image on the user's hard disk and displays it on the screen. Users can define the size and location of the images, which can be scrolled, zoomed, resized and displayed in either color or gray scale on color graphics adapters through Super VGA monitors.

Steve Hadjistyllis, a programmer/analyst at Management Information Technology, Inc., a software company in Long Beach, Calif., used Quickpix to develop a software package that assists users in choosing pumps for oil wells. The program asks the user questions while Quickpix displays explanatory pictures.

The firm included the pictures because the pump selection package was to be operated in foreign countries by users who would not necessarily have a sufficient understanding of English.

Hadjistyllis said Quickpix was easy to configure and operate and added that his firm plans on using it again, especially if Powersoft designs a way to keep the image on-screen while the primary application continues working underneath it. "The way it is now, if you want to continue with your program, the picture has to go off the screen," he said.

Richard Hooker, president of Powersoft, said the next release of Quickpix would include such a feature.

Tom Isaac, a principal at ICA-Trinova, Inc., an international consulting firm in Newnan, Ga., has been using Quickpix for about one month. His firm is currently developing a software product for the utility industry to help manage such functions as site work, repairs and inventory. He said that Quickpix could display 256-color Super VGA images in about 10 seconds, which he said he considered an acceptable delay.

Quickpix is currently available and is priced at $495 for a single unit, which includes a license for up to four additional users.

Compaq

CONTINUED FROM PAGE 37

virtually no reduction. "We haven't seen any change in the last two weeks," said MIS Director Sam Colello, who priced two Compaq portables for Oil-Dri Corporation of America. "Compaq just moved some dollars around; I don't think they significantly lowered the cost," added Bruce Greif, project analyst at County Natwest, Inc. in New York and a member of the Microcomputer Managers Association.

Compaq's dealer-charge restructuring may let resellers offer better deals on competitors' products. For example, Compaq's LTE 386S/20 now lists for $1,200 less than IBM's new laptop. But superior discounts on the IBM product bring its street price down to only $250 more than the LTE's, one dealer said.

This hard pricing reality has disgruntled some users.

"What good do the cuts do us if our [dealer] discount goes down?" said Don Stevenson, technical services analyst at financial services firm The Boston Co., which lost 14 percentage points off of its corporate discount. The firm will now offer its clients a low-cost clone alternative to Compaq and IBM Personal Computers, a decision it might not have made had the full Compaq reductions been realized, Stevenson said.

Other users are more forgiving. The discount is deflated, but "it's still the same machine for less money," said Fred Zickert, manager of microcomputer support at Cleveland-based Eaton Corp. "Now, clearly, the value is with Compaq equipment" vs. other clones, he said.

A minority of users reported some dealers passing the entire list reduction to users. The resellers are willing to sacrifice profit to generate volume and win accounts from competitors. But this practice has devastated dealer profitability in the past and is not likely to be the norm.

"It would be nice for a change to see dealers try to hang on to the profit and not cut the price all the way to the floor," said Valcom President and Chief Executive Officer William Fairfield, who predicted that most dealers will withhold a share of Compaq's cut.

There is little evidence so far that the cuts have increased sales, several dealers said. But Compaq purchases at Eaton have indeed gone up. Departments have been able to order more machines because the new prices come in under the wire of departmental budgets, Zickert said.

Compaq North America Vice President Ross Cooley said early anecdotal evidence shows significant numbers of customer accounts reconsidering Compaq over low-priced clones. Cooley admitted the price cuts may look better on paper than on the street, but he stressed that "the price of Compaq products today is absolutely less in each and every product than before we made the change."

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MICRO BITS

Microsoft unveils its first Macintosh scheduling tool

Microsoft Corp. unveiled its first scheduling application recently with the introduction of Schedule+ for the Apple Computer, Inc. Macintosh. The new time management package can be added onto Microsoft Mail for Appletalk networks Version 3.0. Schedule+ is expected to be available at the end of this month and will cost $195 for five nodes and $775 for 20 nodes. Separately, the Redmond, Wash.-based firm said it will provide developers with its object-oriented architecture format in order to encourage the production of object-oriented development tools for Windows.

Computer Associates International, Inc. has slashed the suggested retail price of its Supercalc5 from $495 to $149 — a 70% drop.

Software Publishing Corp. in Mountain View, Calif., demonstrated its new Virtual Media Control Interface at the recent **National Computer Graphics Association** trade show. The interface is compatible with Microsoft's Media Control Interface for multimedia extensions to Windows 3.0 and will be integrated into future products from Software Publishing, including the Harvard Graphics presentation graphics package.

Revelation Technologies, Inc. recently announced that it has formed an alliance with **Hunter Systems, Inc.** Under the agreement, Hunter will port Revelation's Advanced Revelation relational database management system to Unix. Advanced Revelation currently runs on DOS and OS/2.

Grochow

FROM PAGE 37

DOS or Windows. Users can view either one DOS application using the full screen or simultaneously view multiple programs in individual windows. It was pretty impressive to see Lotus' 1-2-3, Ashton-Tate's Dbase and an asynchronous communications package, each running in separate windows in a true multitasking mode (which means that IBM has licked the problem of how to put "ill-behaved" programs such as 1-2-3 inside a window). The same is true for Windows 2.1 and Windows 3.0 applications. You can even transfer data back and forth among them.

There are some other interesting goodies. If you try very hard, today's DOS gives you about 600K bytes of memory for applications. DOS applications running under OS/2 Release 2.0 will have almost 630K bytes available, including mouse and network drivers, and you can "dial" as much extended memory as you need, up to 32M bytes. All this for as many simultaneous DOS sessions as you want, with real memory and disk space as the only constraints.

If you have special drivers for terminate-and-stay-resident programs you want to check out under a particular version of DOS Windows, you can boot that version in any number of multiple DOS sessions.

As for network connections, the questions are not all answered. The folks from Novell demonstrated their client drivers in "alpha" form. They said that if the betas aren't ready soon, normal DOS drivers will run in a DOS session. Simultaneous LAN Server connections will be there, too, on both Novell and LAN Server. IBM also showed an Open Software Foundation Distributed Computing Environment setup between OS/2 and a RISC System/6000 running AIX.

The question now is, why would any 386 user buy DOS or DOS with Windows? The answer will become more apparent when OS/2 2.0 ships later this year. As you become more adventurous, you can open up some of the other capabilities and begin to see how OS/2 can make all but the most novice PC user more productive. Certainly, this is IBM's strategy for rapidly increasing the number of copies of OS/2 in the field, and I think it will work — particularly for a $99 trade-in from any existing DOS version until the end of the year. (If IBM still has its marketing smarts, it will extend the offer.)

Meanwhile, hundreds of beta-test copies are already in the field. Any IBM employee can download it from the company's internal systems, and hundreds of additional copies will go out during the next several months. In fact, IBM is sending disks of the beta-test copy to any press conference attendee who wants one. This shows the high degree of confidence IBM has in OS/2 reliability and the likelihood that it will ship as scheduled.

In OS/2 Release 2.0, IBM is promising delivery of everything Gates promised for OS/2 Release 3.0 (also called New Technology OS/2) in 1993 (and arguably more). Why IBM waited until now to demonstrate these capabilities and let Windows get such a runaway head start on the market is anybody's guess. My reckoning is that it took Microsoft to publicly commit to a Windows application programming interface to stoke up the fires at IBM. The results are very impressive. For that, I say, "Thank you, Bill Gates."

Grochow is vice president of the Corporate Technology Group at American Management Systems, Inc.

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Panasonic's KX-P4420: Small price, big size

Technology Analysis — A roundup of expert opinion about new products. Summaries written by freelance writer Suzanne Weixel.

Panasonic Communications and Systems Co.'s KX-P4420 laser printer presents a bit of a paradox, reviewers reported. It is priced inexpensively enough to serve for personal use, yet it is too big for a desktop, and its lack of paper-handling features is a drawback in a shared environment.

Output: The KX-P4420 has fine print quality, in part because of its print density controls. It has 11 resident fonts and uses proprietary font cards, which, if you already own other font cartridges, may be a problem.

Performance: Despite its eight page/min speed, which is fast enough to support a small office or work group, the KX-P4420 lacks some paper-handling features, such as dual-bin capacity. It has 512K bytes of random-access memory, expandable to 4M bytes.

Ease of use: The KX-P4420 is difficult to set up and has an awkward shape, reviewers reported.

Service and support: Panasonic's support line can be hard to reach.

Value: With features best described as standard, the KX-P4420's most compelling quality is price, reviewers agreed. It lists for $1,395.

Panasonic Communications and Systems Co. KX-P4420

Reviews	Output	Performance	Ease of use	Service & support	Value	Score
Infoworld 12/10/90	Excellent	Excellent	Very good	Good	Excellent	7.5*
PC/Computing 8/90	Standard	Good speed	Bare-bones features	NC	A bargain	Fast, inexpensive
PC World 2/91	Excellent	Excellent	Fair	NC	Excellent	Best buy
Users						
David Kuttruff, Physicians Management Services	■■■■	■■■■	■■■■	■■■	■■■■	Fast, quality output
Richard Bellshot, Dutch Maid, Inc.	■■■■	■■■■	■■■■	NC	■■■■	Great value
James Arzbaecher, Reliable Packaging, Inc.	■■■	■■■	■■	NC	■■■■	Meets expectations
Analysts						
Susan Rahn, Dataquest, Inc.	■■■	■■■	■■■	■■■	■■■■	Excellent
William Gott, Gartner Group/Infocorp	■■■	■■■	■■■	■■■	■■■	Good deal
Marc Boer, BIS Strategic Decisions	■■■	■■■	■■■	■■■■	■■■■	A bargain

Key: ■■■■ Very good ■■■ Good ■■ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone surveys. NC: No comment. **Infoworld* score based on 1 to 10 ratings

Panasonic financial ratings

Analysts	Long-term stability	Short-term performance
Takafumi Ochiai, New Japan Securities	■■■■	■■■
Ross O'Brien, Pyramid Research, Inc.	■■■■	■■■■

Matsushita Electric Industrial Co., Panasonic's parent company, earned $36.7 billion in 1990, a 9% increase over 1989. The printer division increased sales by 24%

Panasonic responds

Peter Reyman, product manager, laser printers:

Output: Our product line includes an Adobe Systems, Inc. Postscript printer.

Performance: Although it is fast enough to be shared, it was designed for a single user who does a lot of printing in an office environment.

Service and support: We have upgraded our telephone support within the past few months.

Okidata's OL 820: Lightweight, fast, reliable

Using LED technology rather than laser, Okidata Corp.'s OL 820 LED Page Printer offers a lightweight, fast and reliable alternative to mainline laser printers, reviewers said.

Output: Some reviewers claimed the OL 820's output is lighter than a laser's, even on the darkest of five settings. Font and graphics support, however, is extensive, including a proprietary font-scaling scheme, font rotation, shadowing and shading.

Performance: The OL 820 prints at eight page/min. It has a front-loading 200-sheet paper tray, two slots for proprietary font cards and 512K bytes of random-access memory, expandable to 4M bytes.

Ease of use: The toner cartridge and drum must be replaced separately. Otherwise, the printer's design is simple, and its controls are intuitive.

Software and support: LED printers have fewer moving parts than lasers, so they should be more reliable. The OL 820 comes with a five-year parts warranty.

Value: Reviewers agreed that if you can do without Adobe Systems, Inc.'s Postscript, this printer offers low price, high performance and a little extra in terms of font support.

It lists for $1,999. An additional 200-sheet paper tray costs about $300, while a replacement controller for adding Postscript costs $1,595.

Okidata Corp.'s OL 820 LED Page Printer

Reviews	Output	Performance	Ease of use	Service & support	Value	Score
Byte 12/90	No difference	Fast	Good	May be more reliable	NC	Laser alternative
PC Computing 8/90	Admirable	Blew past competition	NC	NC	Best bet	Fast, not fancy
PC World 9/90	Poor	Excellent	Fair	NC	Fair	Not without its merits
Users						
John Carven, Jupiter Technology, Inc.	■■■	■■■■	■■■	■■■■	■■■■	Good buy
Joyce Farnsworth, JEF Associates	■■■■	■■■	■■■■	■■■■	■■■■	Reliable
Christopher Horvath, Stonybrook Technologies, Inc.	■■■■	■■■■	■■■	■■■	■■■■	Scalable fonts a plus
Analysts						
Robert Fennell, Dataquest, Inc.	■■■■	■■■■	■■■	■■■	■■■■	Good, but not for everyone
William Gott, Gartner Group/Infocorp	■■■■	■■■■	■■■	■■■	■■■	Good price
Marc Boer, BIS Strategic Decisions	■■■■	■■■■	■■■	■■■■	■■■	Niche product

Key: ■■■■ Very good ■■■ Good ■■ Fair ■ Poor Reviewer evaluations are excerpts from articles. Refer to actual reviews for details. User and analyst ratings are based on telephone surveys. NC: No comment

Okidata financial ratings

Analysts	Long-term stability	Short-term performance
Takafumi Ochiai, New Japan Securities	■■	■■
Ross O'Brien, Pyramid Research, Inc.	■■■■	■■■

Okidata Corp. does not release financial information. Ratings were obtained from financial analysts who follow the company

Okidata responds

Michael Grabel, product manager:

Output: Sometimes printing is lighter because of environmental factors such as humidity.

Performance: There are currently seven DOS applications that support the OL 820 in font-scaling mode.

Ease of use: Keeping the toner and drum separate maximizes life span and is more cost-effective.

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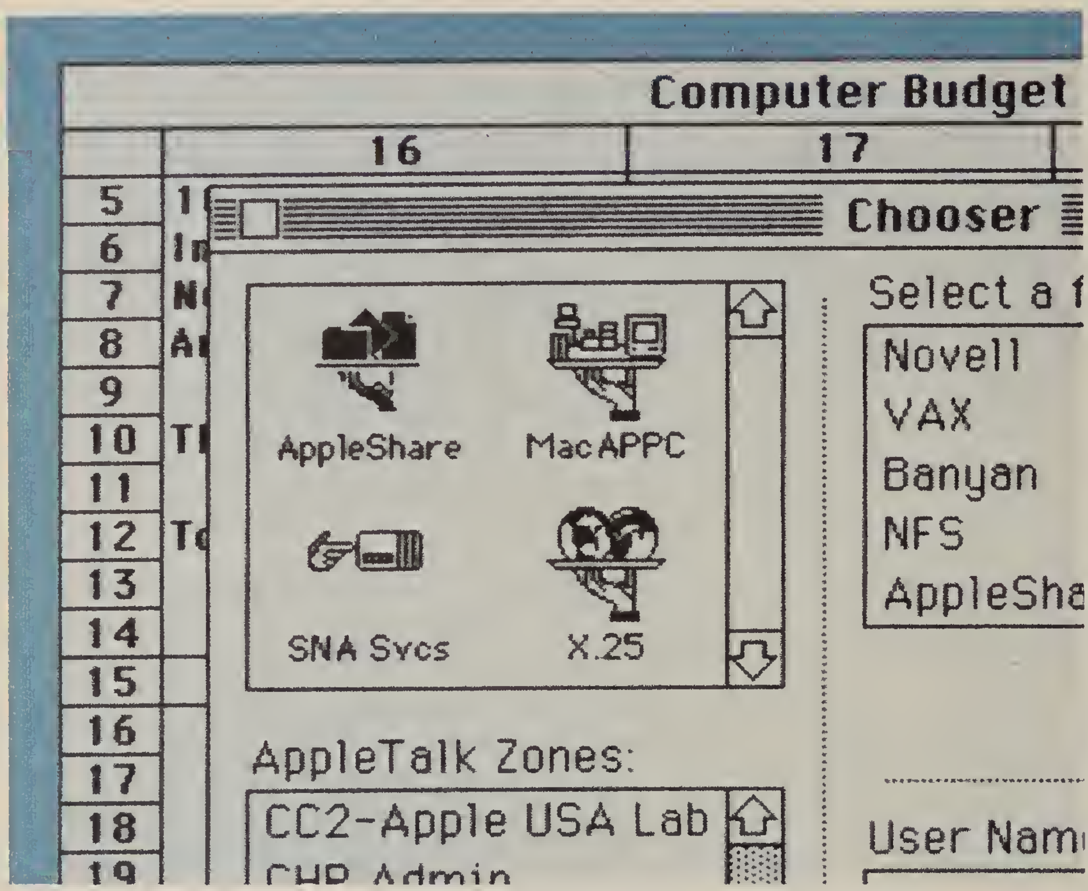

Computer Budget

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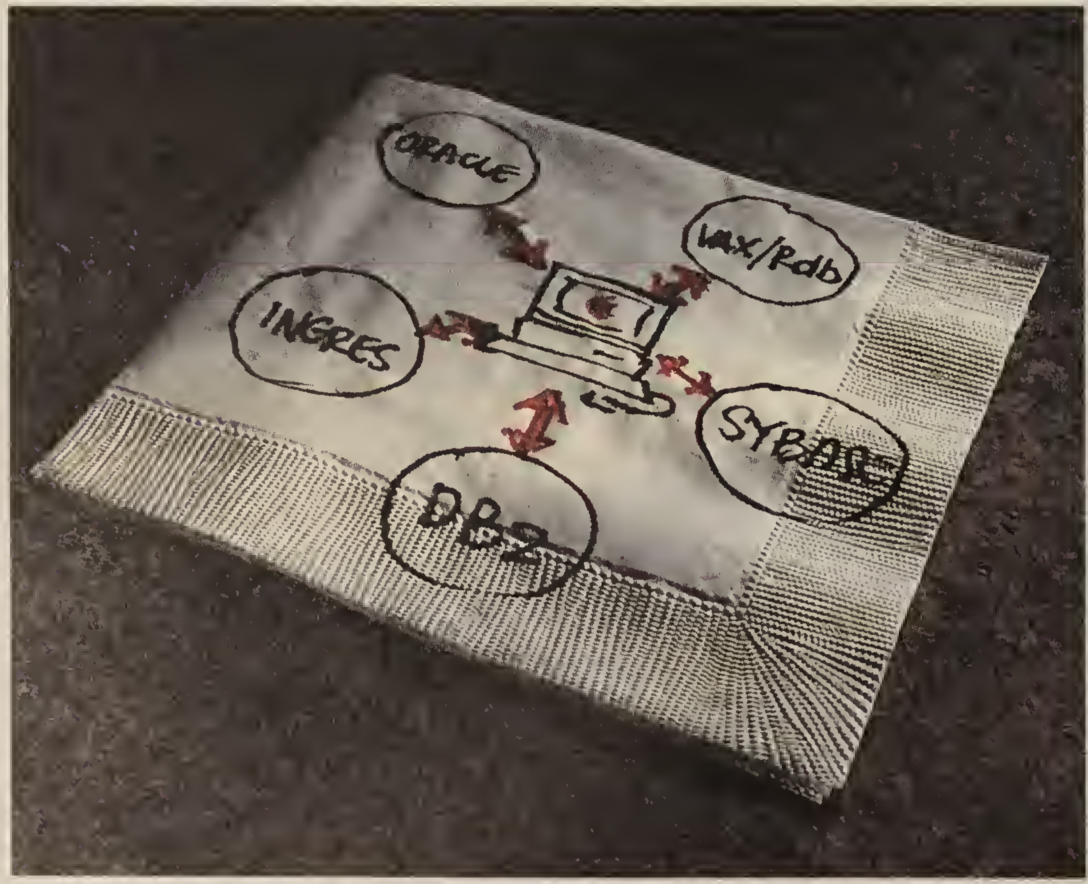
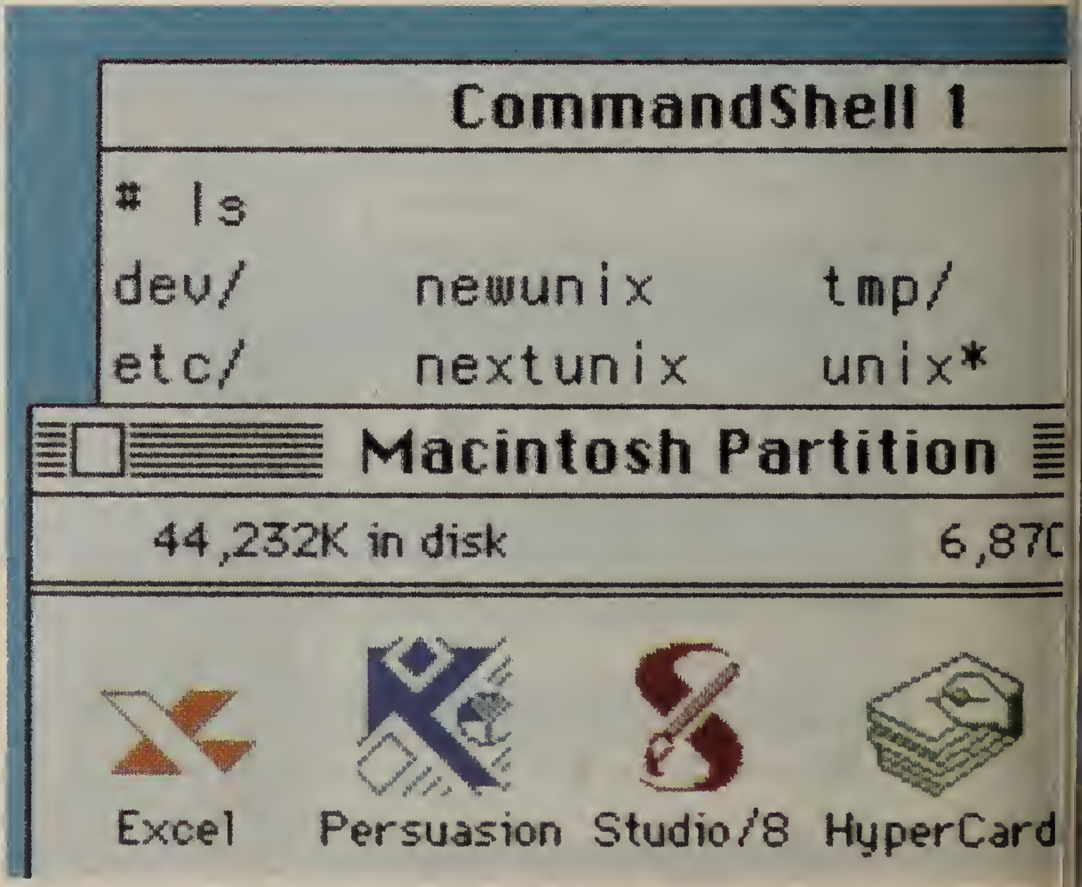
This is the Macintosh Chooser. A single point of access to a wide range of systems. The Chooser shows available network resources graphically and consistently. Just point the mouse and you're connected.

Macintosh offers an incredible range of tools for connecting with virtually any host-based environment, whether it's running SNA, TCP/IP, DECnet™, or OSI.



Apple's Data Access Language (DAL) adapts popular off-the-shelf database, spreadsheet, and data analysis software to major SQL environments. So nontechnical users can easily access remote databases.



CommandShell 1

```
# ls
dev/      newunix      tmp/
etc/      nextunix     unix*
```

Macintosh Partition

44,232K in disk 6,870

Apple A/UX® lets Macintosh run UNIX® applications plus thousands of Mac® programs. At the same time you can run X-Window and MS-DOS applications, an cut, copy, and paste between any of them. No other desktop computer can do this

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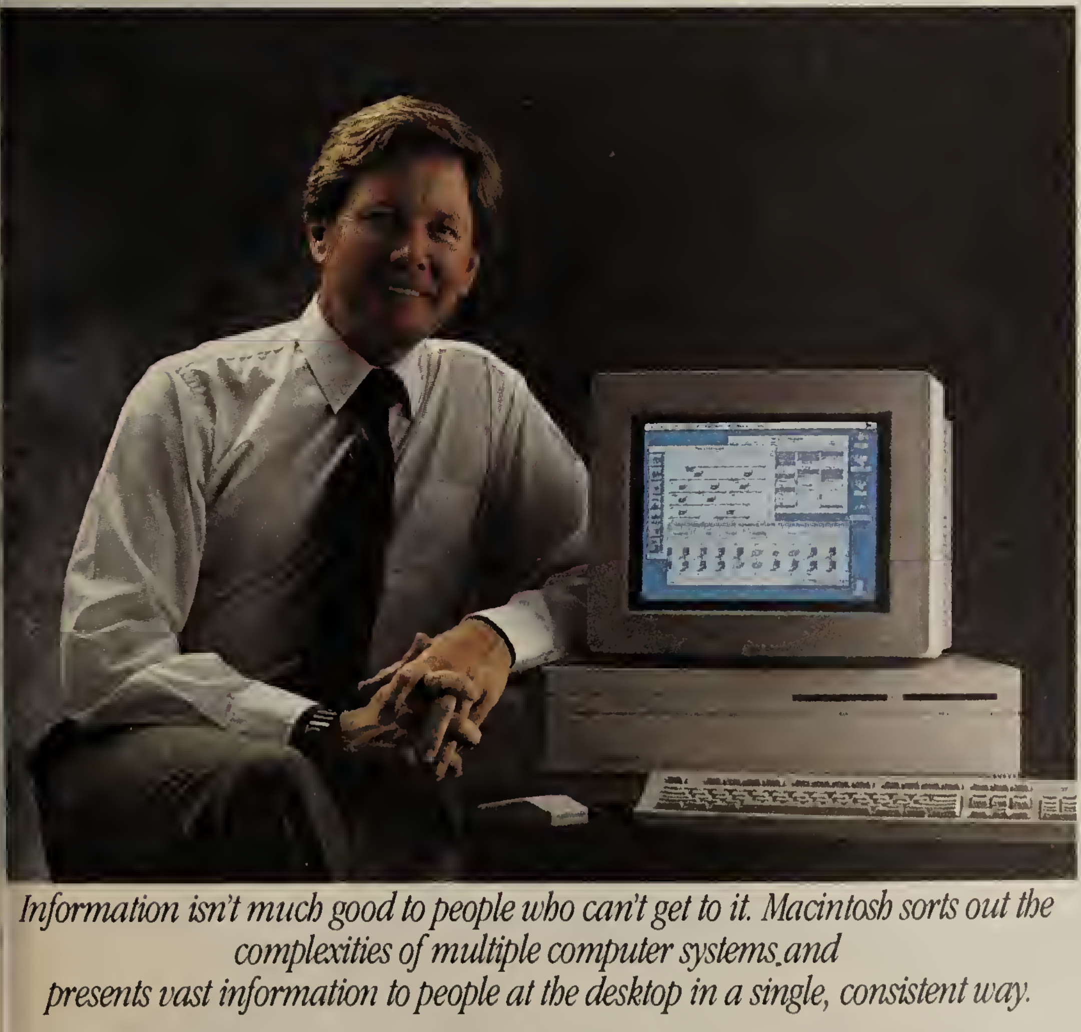
to anything.

Macintosh shares data with DOS PCs via Novell, 3Com, Banyan, and more. Macintosh reads and writes DOS files on a floppy disk. Macintosh runs DOS programs. Maybe your next DOS computer should be a Macintosh.



Information isn't much good to people who can't get to it. Macintosh sorts out the complexities of multiple computer systems and presents vast information to people at the desktop in a single, consistent way.

While diversity may make life rich and fascinating, it makes life as an IS manager something short of serene.

What is politely referred to as the "multi-vendor environment" is an amalgam of disparate hardware, incompatible operating systems, dissimilar databases, and multiple networks. Nevertheless, IS people are expected to make these all work together in perfect harmony.

But lately, a lot of people are finding the source of their solution a pleasant surprise: the Apple® Macintosh® computer.

They're finding that Macintosh comes out of the box with sophisticated networking capabilities designed right in.

That Macintosh is open to virtually any host, any file server, or any database, through any network.

That Macintosh makes the desktop the place where diverse systems come together.

And that with Macintosh you can build systems that let even nontechnical users access information from the desktop, no matter where that information resides.

And because Macintosh works with all your networks, databases, and hosts in one consistent and graphic way, it delivers major savings in implementation and training.

In short, Macintosh gives you the power to make information systems more valuable to the people who use them. The power to be your best.®

Macintosh gives people a single, simple view of the information and services that can help them do their jobs and serve your organization. See for yourself. Call 800-635-9550, ext. 551, and we'll send you a free video showing how Macintosh helps unify complex systems.

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NEW PRODUCTS

Systems

Packard Bell has released some additions to its Legend series of personal computers.

Included in the line is the Legend 100, an Intel Corp. 80286-based computer with a 40M-byte hard disk, priced at $1,499. The company said it expects street prices for the system to be less than $1,000. Packard Bell also introduced Legend computers based on Intel 80386 and 80386SX processors.

A graphical user interface called PB Desktop will be installed on all Legend systems.

PB Desktop is mouse-driven and includes an on-line tutorial, menu creation facilities and Packard Bell support policy information.

Packard Bell
9425 Canoga Ave.
Chatsworth, Calif. 91311
(818) 773-4400

Aquiline, Inc. has released a 4½-pound, 1.4-in. thick notebook computer based on the Intel Corp. 80386SX processor.

The standard configuration includes a 20M-byte hard drive, 3½-in. floppy drive, 1M byte of system memory and an IBM Video Graphics Array display. DOS 4.01 and several utilities programs are included with the system. Memory is expandable to 4M bytes.

The notebook computer is priced at $2,995.

Aquiline
449 Main St.
Bennington, Vt. 05201
(802) 442-1526

Software applications packages

Bestinfo, Inc. has unveiled Picbase, an OS/2-based image archiving system intended for use with networked publishing systems.

Picbase stores high- or low-resolution images and features sort-and-search relational database facilities based on user-defined image labels. The product ranges in price from $15,000 for the first seven users to $80,000 for networks of more than 60 users.

Bestinfo
1400 N. Providence Road
Media, Pa. 19063
(215) 891-6500

Xing Technology Corp. has announced extensions for the VT-Compress Joint Photographic Experts Group (JPEG) image compression software.

VT-Compress for Windows adds JPEG compression capability running under Microsoft Corp.'s Windows 3.0. Compression ratios of up to 20:1 can be achieved for color images, according to Xing.

VT-Compress Linkable Libraries allow integration of JPEG compression into user-developed applications written in Borland International, Inc. or Microsoft versions of the C language.

VT-Compress for Windows costs $259. VT-Compress Linkable Libraries cost $179 per copy.

Xing Technology
456 Carpenter Canyon
Arroyo Grande, Calif. 93420
(805) 473-0145

A compact disc/read-only memory-based database of marketing information on U.S. businesses has been released by American Business Information (ABI).

The product, Lists-On-Disks, contains data on 9.2 million businesses. Information on company size, location and primary business is included.

A free update with a contact name at each target company will be released in July, according to ABI.

A one year license costs $750.

ABI
5711 S. 86th Circle
Omaha, Neb. 68127
(402) 593-4500

Software utilities

PC Dynamics, Inc. has announced Menuworks Advanced, a hard disk access and menuing utility for novice personal computer users.

Menuworks compiles a list of all applications that are present on the hard disk and groups them according to their general function. The program then constructs a menuing system using single-stroke commands.

PC Dynamics reported that the program allows first-time computer users to become productive very quickly. Also included are security features, macros and time-delay backup capability.

Menuworks Advanced costs $120.

PC Dynamics
31332 Via Colinas #105
Westlake Village, Calif. 91362
(818) 889-1741

Development tools

32 Bit Software, Inc. has enhanced its Zbasic-PC, a product for developing 32-bit software on any DOS-based personal computer.

Version 4.6 allows code written on an IBM Personal Computer AT to be recompiled for Intel Corp. 80386 and I486 machines. It includes network support, communications capabilities and device-independent graphics.

The retail price is $150; however, an introductory price of $100 is offered for a

limited time. Upgrades from previous versions cost $60.

32 Bit Software
Suite 865
3232 McKinney
Dallas, Texas 75204
(214) 720-2051

Template Graphics Software, Inc. (TGS) has introduced Figaro+ for IBM RISC System/6000 workstations.

Figaro+ is a three-dimensional graphics programming tool kit that implements the Programmer's Hierarchical Interactive Graphics System standard for engineering and scientific applications development.

The product includes enhanced graphics control, programmable triggers, immediate mode support and simulated input devices.

Pricing for Figaro+ on the IBM workstation platform begins at $3,000.

TGS
3510 Dunhill St.
San Diego, Calif. 92121
(619) 457-5359

Innovative Data Solutions, Inc. has begun shipping Paragen 2.2 code-generation software for Borland International, Inc.'s Paradox relational database.

Paragen includes a file manager element that retrieves a specified Paradox file from the user's hard disk. When a file and a Paradox Engine function to be performed on the file are selected, Paragen automatically generates the necessary code in C, C++ and Pascal languages. The product also creates new database tables without loading Paradox.

The product costs $129.

Innovative Data Solutions
4318 Stewart Court
East Chicago, Ind. 46312
(219) 397-8952

Peripherals

Great Software Ideas, Inc. (GSI) has introduced the GSI-EHD, a 2.88M-byte floppy disk controller for personal computers.

The product transfers data from a 2.88M-byte disk at a rate of 1M bit/sec. It uses standard floppy disk cables, supports two disk drives and is backward-compatible with 1.44M-byte disks.

The GSI-EHD controller, with cables and frame, is priced at $115. A kit including the controller, a 2.88M-byte floppy drive and one disk is available for $295.

GSI
17951 H Sky Park Circle
Irvine, Calif. 92714
(714) 261-7949

Moniterm Corp. has announced a high-resolution display system for laptop computers.

The system combines the company's 20-in., 1,280- by 1,024-pixel monochrome Viking 3/91M monitor and the PC1280M, a short-slot video board that is compatible with many portable computers.

The system was designed for fast, hardware-driven screen refresh rates, according to Moniterm.

The product costs $1,490.

Moniterm
5740 Green Circle Drive
Minnetonka, Minn. 55343
(612) 935-4151

Film Division, Inc. has announced a service providing high-resolution slides and transparencies from computer images.

The technology supports most personal computer graphics and computer-aided design programs and some Apple Computer, Inc. Macintosh presentation graphics packages, according to Film Division. Files submitted either on disk or by modem can be reproduced in color 35mm slides or 4- by 5-in. transparencies or negatives. Resolution is 8,000 lines per image for transparencies and 4,000 lines per image for slides.

Rates start at $7 per slide.

Film Division
676 N. LaSalle St.
Chicago, Ill. 60610
(312) 642-3362

Macintosh products

Aura CAD/CAM, Inc. has lowered prices for its Aura computer-aided design software line for the Apple Computer, Inc. Macintosh.

The price for the two-dimensional Auracad 3.0 has been lowered from $1,399 to $599. Copy protection has also been removed, and the company announced it will include both color and black-and-white versions of the software in every package.

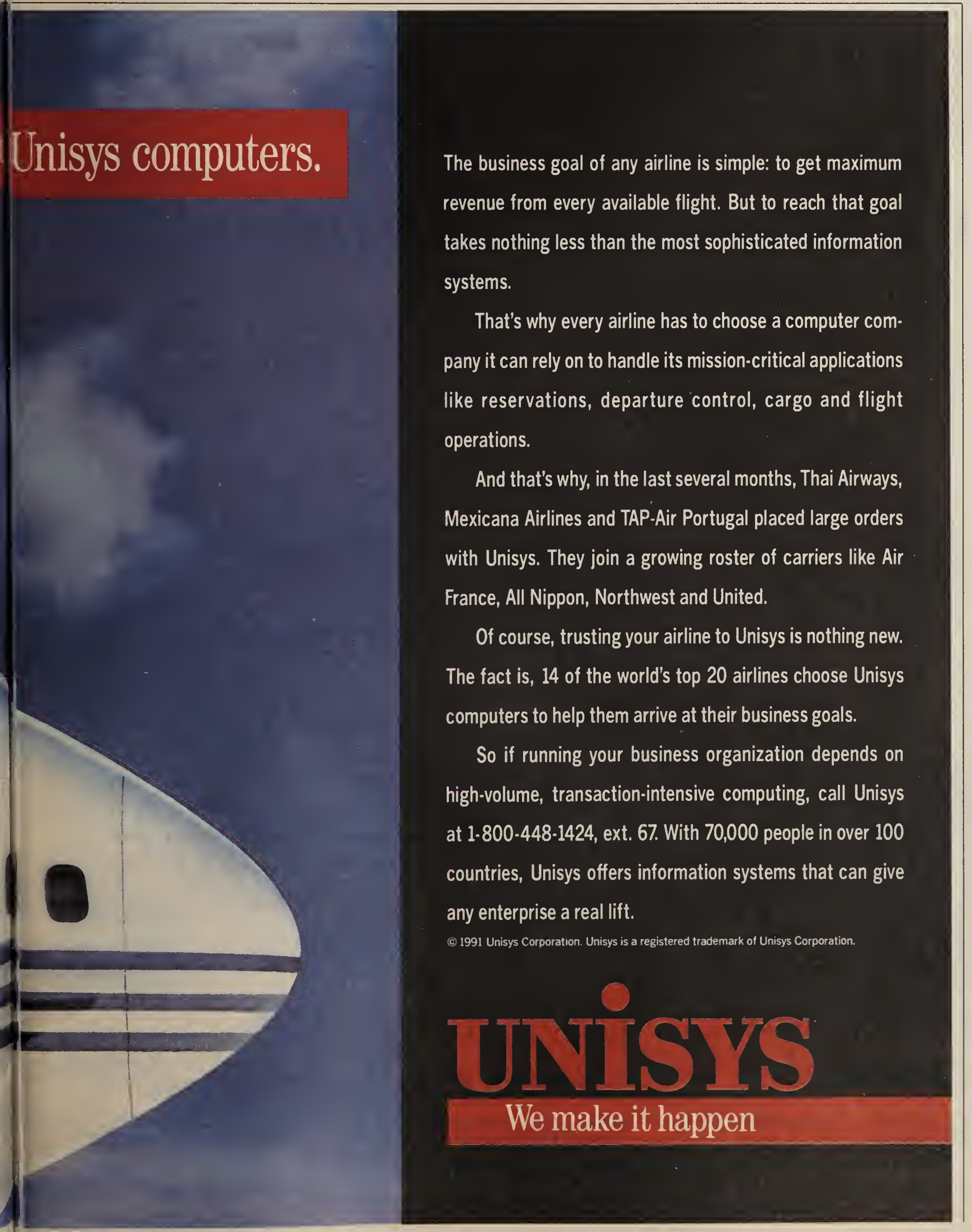
Aura CAD/CAM
2335 Alaska Ave.
El Segundo, Calif. 90245
(213) 643-5300

PSI Integration, Inc. has introduced two products to expand the capabilities of the Apple Computer, Inc. Macintosh LC.

The PSI Multicolor is a color video single in-line memory module that allows the Macintosh LC to use 16-bit color without adding a video card. The Multicolor is priced at $159.

The PSI Crunch-It is a math coprocessor card based on a 16-MHz Motorola, Inc. 68882 chip, priced at $179. According to the company, adding the card gives users access to several spreadsheet packages that could not otherwise be run on the Macintosh LC.

PSI Integration
Suite 200
851 E. Hamilton Ave.
Campbell, Calif. 95008
(408) 559-8544



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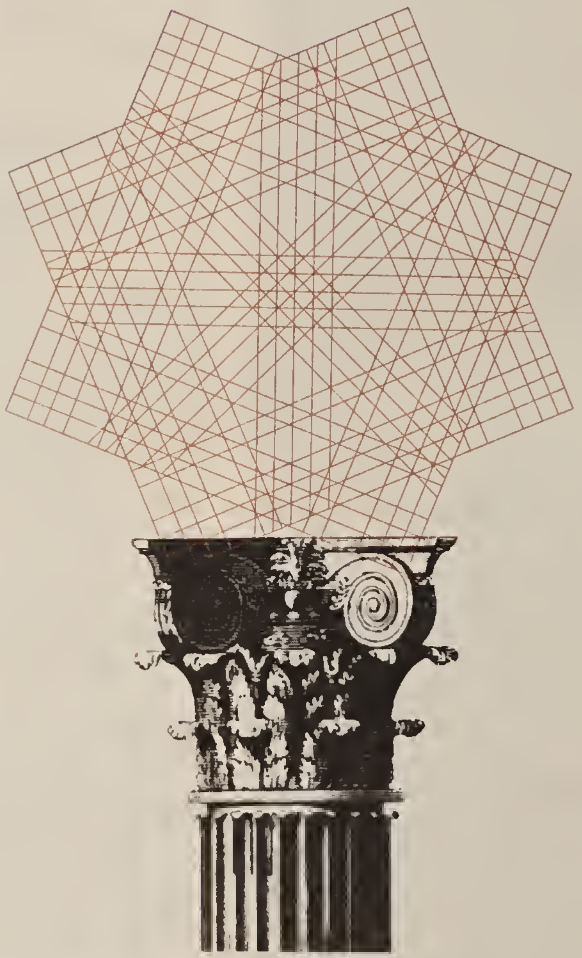

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   - **32.** Programmers, Software Developers
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Fresh faces give FCC new views

ANALYSIS

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — A rare thing happened over at the Federal Communications Commission earlier this month — rare because it did not involve any lawyers trying to tweak or exploit communications regulations for their clients.

The five commissioners held an unprecedented hearing on "Networks of the Future" to get advice from people they do not ordinarily hear from, including network users, technologists and assorted public policy experts. The FCC needs to do more than react to the "regulatory in-box," explained Chairman Alfred C. Sikes. "We need to understand commercial, technical and regulatory relationships better."

What the FCC heard from the witnesses is that rapid changes in technology will soon make today's regulations, derived from a 1934 statute, very outdated. "We need to . . . rethink the current structure of regulation from the bottom up," said G. Mitchell Wilk, a commissioner at the California Public Utilities Commission.

Dale N. Hatfield, a telecommunications analyst in Boulder, Colo., said the trend toward multimedia communications — fluid combinations of video, audio and text or data — leads to a blurring of traditional service distinctions and raises a host of regulatory issues.

Under current regulations,

Continued on page 57

IBM edges closer to Netware

Move to Netware not seen as end to LAN Server, IBM executive claims

BY JOANIE M. WEXLER
CW STAFF

IBM wants to make the nuances between IBM's OS/2 LAN Server and Novell, Inc.'s Netware as subtle as those "between a Buick and an Oldsmobile," said Bob Roth, IBM's manager of enterprise local-area network communications strategy and design. That is the goal of technical cooperative efforts between the two vendors, he said in an interview at IBM's Research Triangle Park, N.C., facility recently.

IBM is holding fast to the "separate but equal" position it took in February, when it announced it would market Novell's widespread Netware network operating system alongside its own offering, OS/2 LAN Server. The move was deemed by some industry observers to be a death knell for LAN Server, a perception Roth said was incorrect.

On a technical basis, Roth said, customers today could choose either network operating system. "We don't know what people will do. That decision will depend on individual preferences."

However, he added, "I really do feel we're putting the same energy and attention into both LAN environments. The two networks are very close to each other functionally, though people have trouble believing that."

Roth said that "interoperability from a communications and management perspective is the biggest customer issue today."

However, Frank Dzubeck, president of Communications Network Architects, Inc., a consultancy in Washington, D.C., said that while "interoperability is what the whole Novell/IBM relationship is about, by definition, if two things have to be made interoperable, that's an admission that they're not the same."

> "IT'S NOT CLEAR to me which way IBM is going to go."
>
> JERRY NOBLE
> AMERICAN CANCER SOCIETY

He said that the Netware/LAN Server choice is not the "draw" Roth paints. In situations where a company requires a stand-alone LAN, "there's no reason for Netware not to be sold." But for integrated LANs needing security and interconnection to mainframes, he said, LAN Server is the better choice.

IBM decided in mid-1989, Roth said, that it could not ignore the Novell-dominated distributed environment, "just as Novell couldn't escape the mainframe path." IBM formed the Enterprise LAN Group in mid-1990 to bring together the two worlds.

The relationship has "caused confusion for the IBM customer," commented Steve Morse, an information systems officer at Manufacturers Hanover Trust Co. in New York, a large Netware shop. "Many customers aren't sure which to buy or why. For us, we know we want Netware. Once you have it and it's satisfactory, why mix envi-

Continued on page 61

FEATURE: UPGRADING OLD NETWORKS

Money talks, managers balk

BY LARRY STEVENS
SPECIAL TO CW

Arcnet. PC Net. Netware 86. MAP 2.1. These and other proprietary networks and protocols were the engines that drove computing communications in the early to mid-1980s. Now, they have long since been outstripped by more open, efficient choices. But that doesn't mean they have gone away. A struggling economy and a continuing cost consciousness within information systems have left managers tending relatively ancient networks, waiting for the day they can upgrade.

In almost all cases, the reason to remain with an old network is an economic one. "Our current [Datapoint Corp.] Arcnet system costs us virtually nothing now," says Timothy Ostrom, IS director at Data Forms Co. in Brighton, Mass. "We have no lease payments, no installation costs, no maintenance fees."

Since 1986, Data Forms has been doing all maintenance in-house; when Ostrom needs parts or additional equipment, he can buy them on the used market for far less than their old retail price. For example, he recently picked up a 100-user system, including terminals and cables, for about $400. The same system would have cost more than $6,000 in 1985, he says.

Companies have to weigh two factors when considering upgrading: the advantages of a modern system vs. the cost of converting. For some, that cost is simply too great. William Lawrence, supervisor of the network engineering group at Southern California Edison, says his expected

Continued on page 60

Marc Rosenthal

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IBM gears AS/400 for enterprise network

BY ELISABETH HORWITT
CW STAFF

With its most recent wave of Application System/400 announcements, IBM continued repositioning the midrange system from a departmental processor to a key player in large customers' enterprisewide distributed networking strategies.

"Originally a stand-alone application processor, the AS/400 is obviously changing, with IBM's recent networking enhancements, to a much larger part of much larger networks," said Mark Leary, director of communications research at Framingham, Mass., research firm Technology Investment Strategies Corp.

Among the announcements that significantly added to the AS/400's networking prowess were the introduction of Open Systems Interconnect (OSI) support; internal Integrated Services Digital Network (ISDN) support; integration with Novell, Inc.'s Netware; and greater flexibility in network configuration.

IBM announced an AS/400 version of the OSI Communications Subsystem, which previously ran only on IBM MVS and VM hosts. The subsystem is said to allow AS/400s to communicate with and manage non-IBM systems using OSI protocols and to act as a gateway to the OSI environment for attached devices running OSI-compatible applications.

The initial OSI software for the AS/400 has several limitations, however. First, it supports only CCITT X.25 packet-switched networking environments. Support for Token Ring and Ethernet local-area networks, which are also part of OSI, has yet to be announced.

In addition, IBM will not release key OSI applications for the AS/400 for one year. These include the X.400 electronic mail protocols and the File Transfer, Access and Management protocol.

Finally, OS/400 will support the OSI Common Management Information Protocol (CMIP) and Common Management Information Service (CMIS), but only the 1986 versions of those protocols. While IBM has committed to supporting the OSI Network Management Forum's version of CMIP and CMIS, the current versions of these protocols for OS/400 and other IBM systems are five years old and unlikely to interoperate with other vendors' more recent implementations.

IBM's announcement that AS/400s on different networks can now communicate on a one-to-one basis is "very, very key," Leary said. Until now, the only way to provide such a link was to combine those networks into a single topology. "That was a pain in the neck, given that many companies want to set up different [AS/400] networks for different functions and yet have all the networks communicate on an occasional but regular basis, for financial reporting or product planning," Leary said. Combining all AS/400s into one network can also cause routing, fault isolation and traffic management problems that grow in intensity as the number of midrange systems increases.

Looking outward

IBM sees Application System/400 networking going beyond the work group to encompass a complete enterprise

- One-on-one communication between disparate AS/400 networks.
- Connections to non-IBM devices via Open Systems Interconnect.
- Remote AS/400 terminal-to-host links over existing Systems Network Architecture backbones.
- The ability to access Novell, Inc. Netware and IBM PC Support/400 servers from the same client workstation.
- Lower cost, internal ISDN interface.

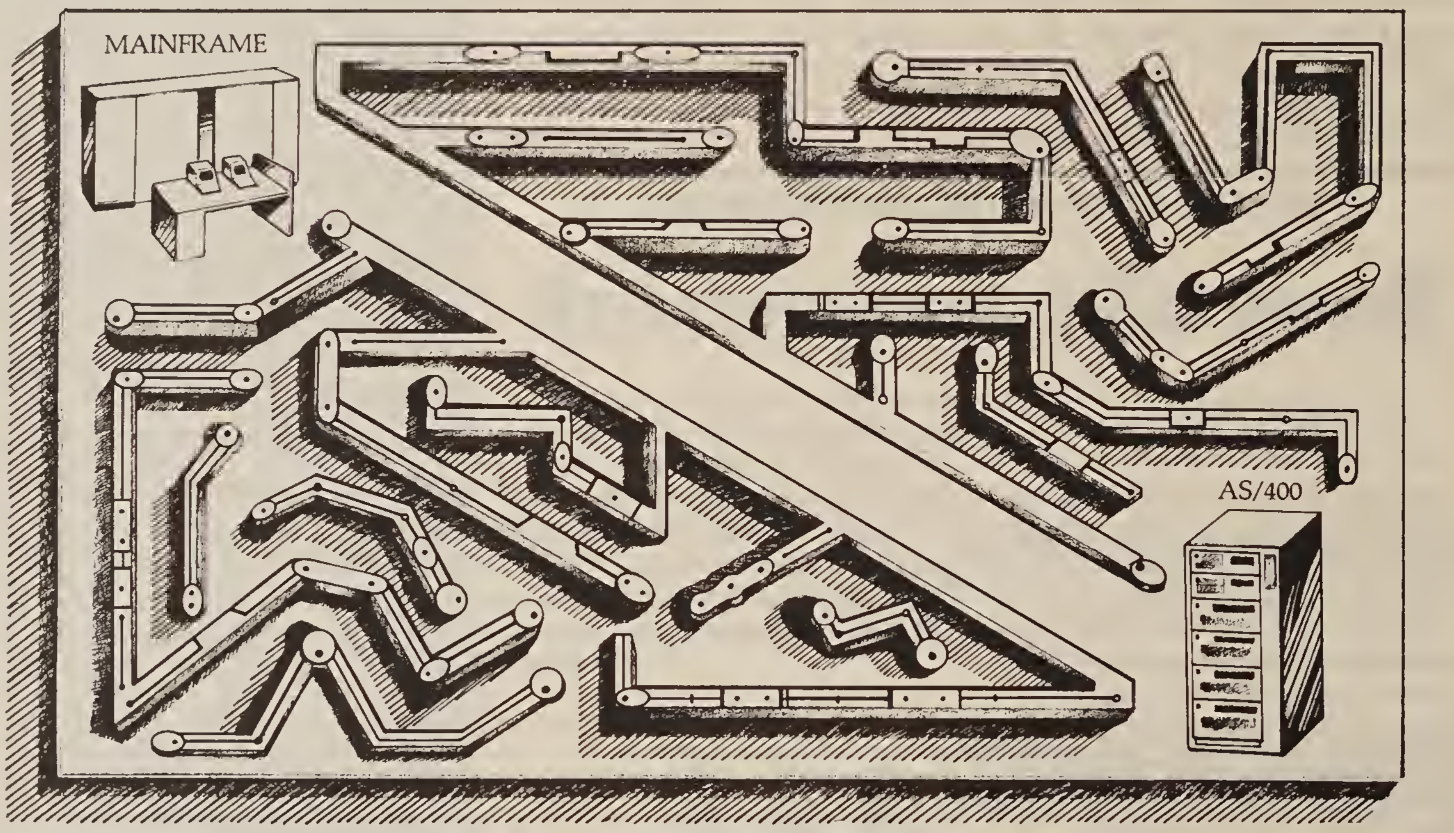
CW Chart: Doreen St. John

IBM also announced that the 5394, a cluster controller for AS/400 5250 terminals, will be able to communicate with remote AS/400 hosts over an IBM Systems Network Architecture backbone. This is another boon to growing AS/400 installations that previously had to set up separate leased-line networks to link geographically dispersed terminal clusters and AS/400 hosts.

IBM and Novell's announcement of plans to integrate Netware and AS/400 servers followed the lines of the earlier announcement to integrate Netware and IBM's LAN Server. Initially, users will be able to access a Netware server or an AS/400 running PC Support/400 from the same client workstation. However, as with the earlier OS/2-Netware announcement, IBM and Novell plan to provide greater integration between the two systems, according to Steve Carter, IBM's manager of AS/400 distributed products.

Also announced was OS/400 support for the Common Programming Interface for Communications (CPIC), an IBM Systems Application Architecture protocol that provides a common application interface for IBM LU6.2 protocols. Applications written to CPIC on one system are said to be migratable to, and interoperable among, other CPIC-compliant systems.

IBM also introduced an internal ISDN Basic Rate Interface board for the AS/400. The existing AS/400 external board, developed jointly with Teleos Communications, Inc., supports the higher speed Primary Rate Interface.



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FROM PAGE 55

for example, a long-distance voice call made via an interexchange carrier to retrieve voice mail incurs access charges, but a long-distance data call to retrieve messages via an enhanced service provider such as an electronic mail service does not.

"What happens when these previously distinct services are offered on a common, all-digital network utilizing some form of fast-packet switching?" Hatfield asked.

Competition to the max

Stanley M. Welland, manager of corporate telecommunications at General Electric Co., said the ideal regulatory climate features maximum competition at both the interstate and local levels because then the vendors compete to provide better services and lower prices.

For example, Welland said, the FCC should stop making AT&T file tariffs (GE is a customer of AT&T's Tariff 12) that rival firms MCI Communications Corp. and U.S. Sprint Communications Co. do not have to file.

> "AT SOME POINT, we'll all have a computer on our desk and a phone in our shoe. But who will pay for it?"
>
> SHERRIE P. MARSHALL
> FCC

George Gilder, a senior fellow at the Hudson Institute in Indianapolis, said that regulators high and low are stifling the nation's ability to install fiber-optic cables to homes and offices.

Gilder said he envisions a time when these fiber pipelines will deliver a rich menu of video and information services to powerful "telecomputers."

Visions of tomorrow

In a similar vein, Michael N. Liebold, a technologist at Apple Computer, Inc., demonstrated full-motion video snippets embedded in documents, while Mitch Kapor, co-founder of Lotus Development Corp., extolled the virtues of a national public network full of advanced bulletin board systems, multimedia messages and virtual town halls.

While the technologists provided grand visions of tomorrow's networks, they were not as successful at answering the commissioners' questions about how the nation's rate payers can afford it all.

Replacing the nation's copper wires with fiber-optic cables, for instance, would cost an estimated $230 billion.

Even big business users are leery of paying for a massive upgrade of the public network [CW, April 9, 1990].

"At some point, we'll all have a computer on our desk and a phone in our shoe," FCC Commissioner Sherrie P. Marshall said. "But who will pay for it?"

Several witnesses said the U.S. telecommunications infrastructure will become a complex web of public and private subnetworks, raising policy issues concerning technical compatibility, financial arrangements, network quality and privacy protection.

FCC's starring role

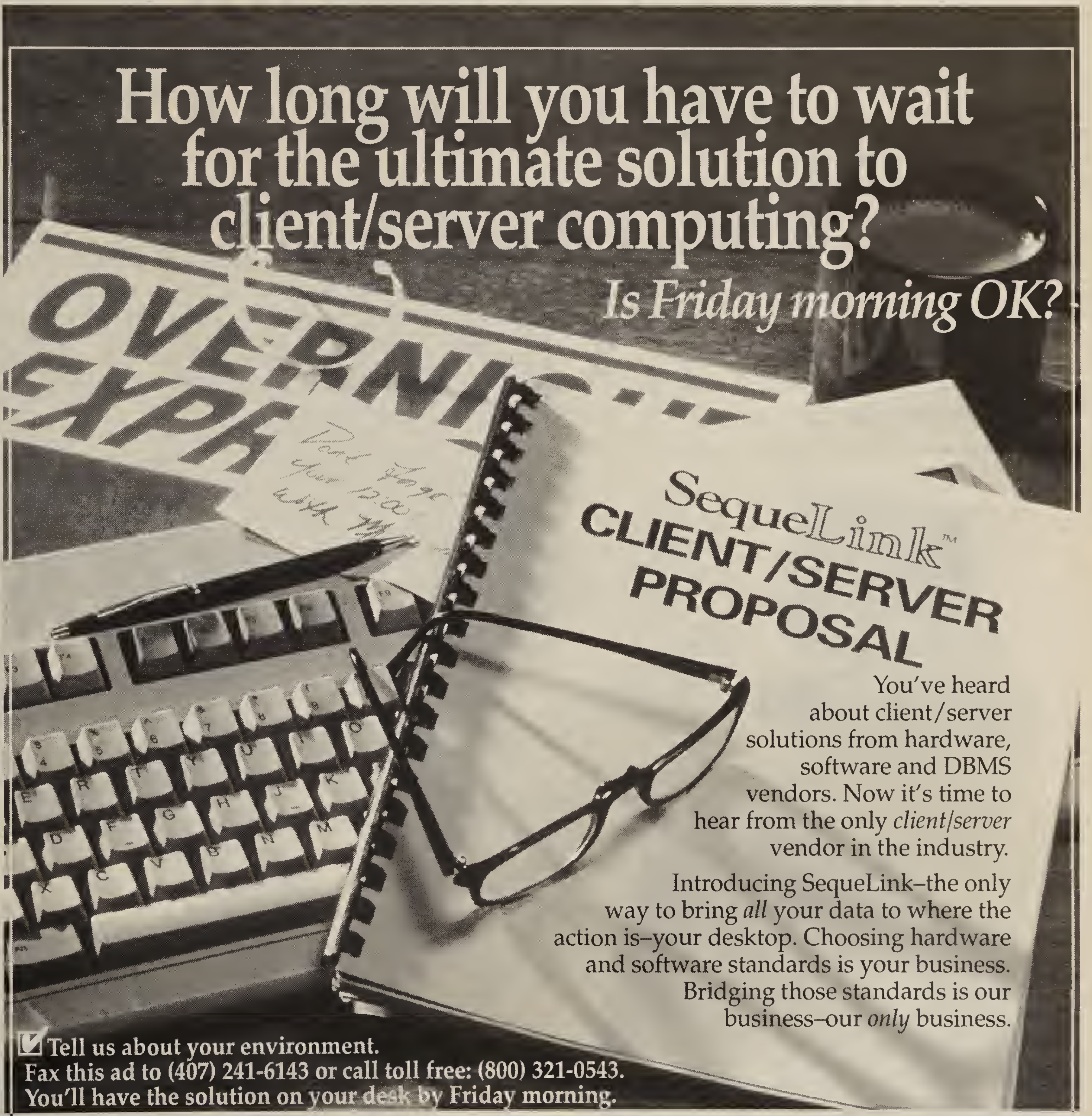
"The FCC should play the role of the nation's systems integrator" for this fragmented network of networks," said Eli M. Noam, a professor at Columbia University in New York.

For example, the FCC could promote interconnection standards by giving the slow-moving standards bodies some timetables and mediation help.

First, however, the FCC may need some internal reorganization to match a world in which telecommunications, mass media and private radio technologies are converging.

The FCC, which now has separate bureaus for regulating each technology, may instead want to have functional bureaus for conduit, finance and technology, Noam suggested.

"All of us need to strive to liberate tomorrow's communications potential from the tyrannies of yesterday's regulatory rules," Sikes concluded.



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Money talks

CONTINUED FROM PAGE 55

conversion costs are so high that no presently available network provides enough of a power advantage to make conversion a viable option. "Tell us what we could do with today's technology that is significantly better and worth the trouble of converting. When we jump, we'll leapfrog to a network technology that doesn't exist yet," Lawrence says.

Lawrence manages two facilities. Both sites are joined by a wide-area network. One has an 1,800-node Arcnet system used for office automation, while the other has been upgraded to a Token Ring network that has 4,000 nodes.

To maintain adequate performance on the Arcnet network, Lawrence has to subdivide the network into smaller physical networks to avoid degradation in response time.

Only so much you can do

Steven Bayus, director of information systems and services at Academy Insurance Group, Inc. in Atlanta, agrees that maintaining speed on an older network takes some planning. He says Academy has reached the limit of network expansion. "If we try to add a few more nodes, we'll blow our nose off our face," he says.

Most experts say that when a network reaches the point when it is no longer viable, network managers will have little trouble selling the new network to upper management. Frank Dzubeck, president of Communications Network Architects, Inc. in Washington, D.C., says that when the time is right to convert, upper management will usually know it: "More likely, they'll be coming to the network guy, asking him what can be done to solve the network problems, such as speed."

Until that point, one key to keeping older networks alive is the ability to do in-house maintenance. When Bayus realized he was going to have a problem getting maintenance support for his Arcnet network, he had his people follow vendors around while they installed or repaired devices on the network. "Pretty soon," he says, "we realized they weren't doing anything we couldn't do ourselves."

The other task that often falls on the shoulders of managers of older systems is programming. Data Forms' customers run Datapoint terminal emulator software on their personal computers to place orders, look up the status of old orders or check on inventory. While there is enough canned office automation software available for systems running over Arcnet, the complex order entry and forms database at Data Forms had to be developed in-house, Ostrom says.

At many firms, an attitude of "we can get by with this" continues to prevail. Michael Kaminsky, manager of the advanced engineering staff at General Motors Corp.'s technology center, says managers should be able to justify an upgrade based on advantages to the company.

His company is using that criterion to decide when each GM site should discard the defunct Manufacturing Automation Protocol (MAP) 2.1 in favor of the current MAP 3.0. Kaminsky says MAP 2.1 has no accepted programming language standard, but the Manufacturing Message Format Specification (MMFS) had become somewhat of a de facto standard.

Unfortunately, MMFS was not entirely compatible with Manufacturing Message Standard, the standard with MAP 3.0. As a result, many GM networks that had systems and applications software written in MMFS could not work with MAP 3.0.

Kaminsky says that while there is still a fairly good selection of devices available for MAP 2.1, some of the newest releases work only with MAP 3.0. He said he expects that situation to get worse. "We can't count on vendors to continue to support a network that fewer and fewer companies are using," he says.

But, he adds, until a GM plant finds itself in need of an unavailable technology because of running MAP 2.1, it will stay with the older system. "There is nothing technologically wrong with Version 2.1," he says. "Until a plant hits upon something it can't do with it, they'll keep it."

Harry Saal, president of Menlo Park, Calif.-based Network General Corp., adds that a situation similar to Kaminsky's is occurring in the office automation world: Many companies that are able to keep an older network alive are finding themselves out in the cold when looking to buy newly released equipment.

Saal says, "If you need fringe technology stuff, you have to be in step with most of the world."

Not much choice

While some organizations were forced by lack of choice to buy networks that eventually became obsolete, the problem might have been avoided if the company had estimated growth more accurately.

Thomas Hartman, telecommunications manager at McDonnell Douglas Corp., installed an Arcnet network three years ago. Initially, his company intended to have only 45 nodes at the site. If the system had remained as planned, there would have been no problem.

However, Hartman says, "the network grew out of control, and it is taxing the limits of our Arcnet system."

Now, as he chooses a new network, Hartman acknowledges he is playing it very carefully. "We'll be considering the possibility of further growth," he says. "The network will have to have a lot of room for expansion."

Stevens is a free-lance writer based in Springfield, Mass.

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IBM

CONTINUED FROM PAGE 55

ronments? It sounds like IBM is walking away from a product line, but it's really hard to say."

"It's not clear to me which way IBM is going to go," said Jerry Noble, director of telecommunications and personal computer support at the American Cancer Society in Houston, an OS/2-oriented shop. He said his organization is currently running Netware because its accounting package requires it to manage its hard disk drive storage; otherwise, he would have installed LAN Server.

Now, however, since Netware is slated to be ported to the OS/2 platform when Version 2.0 is released at the end of the year, "we'll probably stick with Novell," Noble added.

Noble said he hopes the need for two LAN operating systems will eventually disappear. The organization will be downsizing its computing operations and installing 600 to 800 OS/2-based LANs during the next two years, and there are a lot of in-house support issues involved with running two LANs.

Roth acknowledged that IBM has "not been as successful as [Novell President and Chief Executive Officer] Ray Noorda" in the LAN business, citing 20,000 to 30,000 LAN Server installations to date; Novell represents the lion's share of the network operating system market with millions of installations.

Fruits of the IBM/Novell union

The following are some of the benefits of the IBM/Novell relationship:

- In April, IBM announced DOS PC client coexistence with Netware v3.11, allowing PC clients to access either IBM's Application System/400 midrange computers or Novell's Netware servers.
- In March, Novell announced IBM Advanced Peer-to-Peer Networking (APPN) end-node support for Netware. APPN, the routing protocol for IBM's LU6.2 application programming interface, allows communications between computers without the intervention of a mainframe.
- In March, IBM announced Lanres/VM, which lets Netware 386 Token Ring LANs and IBM VM mainframes share printers and disk files and allows users to administer Netware on the mainframe.

Other possibilities include Netware for IBM 32-bit OS/2 and RISC System/6000 platforms and Netware/LAN Server interoperability.

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3Com's NFS no standout

BY JIM NASH
CW STAFF

SANTA CLARA, Calif. — Network managers are offering conditional praise for 3Com Corp.'s recently introduced load-on-demand Network File System (NFS) software. While noting its limitations, administrators who have completed beta tests on 3Com NFS Version 1.0 said it is on a par with other available products.

When combined with 3Com Transmission Control Protocol (TCP) Version 1.2, 3Com NFS connects servers running MS-DOS with Unix machines. It allows users to hold concurrent sessions for file and print services between Microsoft Corp.'s LAN Manager, Novell, Inc.'s Netware and NFS-based Unix servers.

"It's not the best TCP [remote procedure call] NFS implementation I've seen," said Jim Woodard, senior network systems programmer at Rockwell International, Inc.'s Network Transmission Systems Division.

Woodard said FTP, Inc.'s PC/TCP Plus is about 20% faster than 3Com NFS. In fact, he and other programmers at Rockwell wrote their own NFS software, which performs 2½ times faster and consumes one quarter of the 80K bytes of memory used by 3Com NFS, he said.

Their software is only an NFS program, without the added baggage of TCP and other protocols used with 3Com's and FTP's products, Woodard explained.

Needs speed

The product would be better, Woodard said, if it could run faster on PCs below the Intel Corp. 80386SX-class machines, as does FTP's application. Connection to Unix machines can take seconds with smaller machines, and I/O rates can fall to levels equal to those of the IBM Personal Computer XT hard drives, he said.

However, it is a good product, Woodard said. 3Com NFS allows users to load and unload NFS protocols when they need to, which conserves memory, he explained.

Another beta-test site manager, who requested anonymity, said he liked 3Com NFS on the surface. But, he said, he will wait to test the new version of Sun Microsystems, Inc.'s PC NFS software against 3Com's product before making a purchase decision.

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Maxm: Flexible alternative to IBM Netview/PC interface

BY ELISABETH HORWITT
CW STAFF

VIENNA, Va. — Companies that want to manage their telecommunications networks via IBM's Netview but find IBM's Netview/PC interface too restrictive now have another option to consider: Maxm from International Telemanagement.

Co-developed by International Telemanagement and IBM, Maxm collects information from a wide variety of telecommunications devices and sends it on to a Netview host for integration with Netview's IBM Systems Network Architecture (SNA) management applications.

A major differentiator is that Maxm runs on Unix workstations, while Netview/PC runs on either OS/2 Extended or Microsoft Corp. DOS workstations.

In addition, Maxm may be the first product to take advantage of IBM's LU6.2 link to Netview, which is due next fall with the release of Version 2 of IBM's network management platform.

Maxm's support of IBM's LU6.2 protocol allows it to be more tightly integrated with Netview applications, according to Ronald Hardy, director of marketing at International Telemanagement.

"The product is a Unix version of Netview/PC," said David Passmore, a partner at Ernst & Young. A growing number of network equipment vendors are basing their network management systems on Unix systems such as Sun Microsystems, Inc.'s SunOS, he added, "so you can link those products back to Netview without putting OS/2 in the middle."

RISC- and Unix-compatible

Maxm currently supports IBM's RISC System/6000 AIX platform but will support other types of Unix, including Sun's, Passmore said.

Another advantage to Maxm is that Unix is more scalable than OS/2, Passmore said. Users can continue to migrate to more powerful systems that can act as Netview service points for increasingly complex and extensive networks.

An OS/2 Personal System/2 workstation that acts as Maxm's user console is attached to such systems. Users sitting at the console can display and consolidate management information in a windowed IBM Presentation Manager environment, Hardy said.

The console also provides the manager with direct access to Netview functions through a 3270 link to a Netview host. The operator can also set up terminal links to control various intelligent network devices directly, Hardy said.

International Telemanagement has already developed connections between Maxm and some 40 types of networking systems, including leading routers, private branch exchanges, digital service units and T1 multiplexers, Hardy said.

The system does not yet support Simple Network Management Protocol (SNMP), a de facto network management standard for a growing number of bridges, routers, intelligent hubs and Transmission Control Protocol/Internet Protocol (TCP/IP) devices.

However, Maxm has its own applications for managing TCP/IP networks, bridges and routers, Hardy said, and it will eventually support SNMP. Tools are provided for users and vendors to configure additional devices to the system.

Maxm will be able to load network management data directly into IBM's Graphic Monitor Facility Workstation when IBM's software is capable of accepting non-SNA data, Hardy said.

NEW PRODUCTS

Local-area networking hardware

David Systems, Inc. has created the Expressbus architecture, which allows the company's Intelligent Concentrators to integrate Ethernet, Token Ring and Fiber Distributed Data Interface (FDDI) networks.

The Expressnet Concentrator with Expressbus includes capacity for four 10M bit/sec. 10Base-T Ethernet networks, four 16M/4M bit/sec. Token Ring networks and two FDDI networks. The Supervisor Module with Expressbus support manages all connected devices.

Pricing is as follows: $1,495 for a concentrator with five slots or $1,995 for a 12-slot version; $2,995 for the Supervisor Module with Expressbus support; $1,700 per 10Base-T module; and $2,000 per Token Ring module. An FDDI module has not yet been announced.

David Systems
701 E. Evelyn Ave.
Sunnyvale, Calif. 94088
(408) 720-8000

Advanced Digital Information Corp. (ADIC) has announced EISA DCB, a bus mastering disk coprocessor board for Extended Industry Standard Architecture (EISA)-based servers.

EISA DCB allows bus transfer rates as high as 33M byte/sec. and small computer systems interface channel transfer speeds of up to 5M byte/sec. ADIC says the product supports Novell, Inc.'s Netware Versions 2.1 and higher as well as Netware 386. The product costs $895.

ADIC has also upgraded its Enhanced Disk Coprocessor Board software to cut disk access times by as much as 50% and support 19 new drive types, the company reported. The software costs $699; upgrades are available free of charge.

ADIC
14737 NE 87th St.
Redmond, Wash. 98073
(206) 881-8004

Network management

Visinet Live, announced by Technology Dynamics, Inc., offers graphical presentation of network data.

The Microsoft Corp. Windows 3.0-based product includes a scripting language that allows network managers to define alarm conditions in precise terms, according to Technology Dynamics. Network displays may include background geographical maps, and network layouts can be illustrated with computer-aided design-based floor plans.

Pricing starts at $1,995.

Technology Dynamics
Suite S-008
430 10th St. NW
Atlanta, Ga. 30318

Bytex Corp. has introduced the Unity Event Manager, a network automation software option for the company's Unity Management System.

Unity Event Manager provides single console management for Bytex switching systems and other equipment. The product supports multitasking and includes extensive alarm management features.

The price of the Unity Management System ranges from $12,000 to $18,000. Unity Management System owners may add the Unity Event Manager for $2,900.

Bytex
Southboro Office Park
120 Turnpike Road
Southboro, Mass. 01772
(508) 480-0840

Micro-to-host

Structured Software Solutions, Inc. has announced Facetterm Version 2, a windowing interface software package for character-based Unix terminals.

Facetterm gives users pull-down menuing and multitasking ability. It is currently available for The Santa Cruz Operation's Unix, Digital Equipment Corp.'s Xenix, NCR Corp.'s Tower and Unisys Corp.'s Unix-based systems.

License costs run from $495 for five users to $7,995 for 100 users.

Structured Software Solutions
Suite 205
4031 W. Plano Pkwy.
Plano, Texas 75093
(214) 985-9901

Network Computing Devices, Inc. has begun shipping a Digital Equipment Corp. LK401-compatible keyboard with all of its X terminals.

The keyboard includes special keys supporting alternate functions found on workstations. It is bundled at no extra charge with the company's monochrome and color terminals, or it may be purchased separately for $150.

Network Computing Devices
350 N. Bernardo Ave.
Mountain View, Calif. 94043
(415) 694-0650

Age Logic, Inc. has announced Xoftware Manager 2.0, an update to its X terminal server software supporting IBM Xstation 130.

The product connects Xstation display terminals to personal computers running The Santa Cruz Operation's Unix and to hosts from Sun Microsystems, Inc. and Digital Equipment Corp. in X Window System environments.

Xoftware Manager includes facilities for caching, memory paging and font serving on the network server.

A single-user license costs $495; a multiple-user license is $990.

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MANAGER'S JOURNAL

Stuck between a VDT and a hard place

Even conscientious managers must be wary of pitfalls in seeking ergonomic advice

BY J. A. SAVAGE
CW STAFF

Like the spontaneous group intuition that eschewed bacon and eggs every morning in favor of oat bran, an almost instant awareness of the need for ergonomic workplace design for computer users has arisen among management. However, as a San Francisco official said, "The snake oil salesmen are coming out of the woodwork on this issue." With all the hoopla and hype, it is difficult for an enlightened manager to go about redesigning the workplace.

Information systems managers report an increased awareness of ergonomics issues, according to a recent survey by International Data Group (IDG) Communications Research Services. In a random survey of large IS departments, nearly three-fourths of the 184 respondents expect ergonomic requirements to become local law within the next three years.

Businesses in San Francisco — which passed one of the nation's first VDT laws in December 1990, requiring ergonomically designed workplaces for computer users — are now coming to grips with just what that means. They are finding that compliance can be expensive or relatively cheap, depending on which designer or ergonomist is hired to do the job.

Managers are faced with hiring professional ergonomists when there are no reliable guidelines for the profession. If managers turn to designers, they have to be wary of those designers turning into furniture salesmen. If managers want to implement ergonomic design themselves, there is some homework involved.

To get around the difficulty of finding an ergonomist, many San Francisco businesses, such as Chevron Corp.'s legal services department, have simply consulted furniture designers. "We have three buildings and 5,000 VDT users," said Robert Kozlowski, manager of legal support services. By going an inexpensive route, primarily with add-ons to allow desk adjustments rather than new desks, "it will cost about $1,000 per employee, but we'll get it back in productivity. They won't have bad backs, headaches, and they won't [complain as much]."

Relying on furniture designers, how-

Continued on page 67

Legal legwork smooths outsourcing strides

BY CATHLEEN A. DUFFY
CW STAFF

A broadway show without a choreographer would produce the same result as a major outsourcing deal without a contract: A group of team players stepping on one another's toes.

Or so it would seem after listening to Michael Pearlman, corporate counsel for Eastman Kodak Co., who spoke at the recent Computer Law Association conference held in Washington, D.C.

Pearlman attributed much of the success of Kodak's 1989 decision to place its information systems operations in the hands of IBM, Businessland, Inc. and Digital Equipment Corp. to its detailed outsourcing contracts, which were developed in conjunction with Conflict Management, Inc., a consulting firm based in Boston.

"Outsourcing contracts need to be detailed and thorough and have the responsibilities of the parties spelled out as much as possible to avoid confusion at a later date," Pearlman said.

The approximately 25-page IBM contract, which took several months of negotiation to complete, orchestrated such things as responsibilities of Kodak and IBM, pricing, commencement date, use and ownership of current computer hardware and data, warranties and indemnities, geographical limitations, personnel and regulatory issues.

According to Pearlman, all sections of the contract are important and carry equal weight under the law.

"But some of the more novel things on the IBM contract had to do with the way pricing was handled. Coming up with a formula that attempted to measure usage objectively was a complicated process," Pearlman said.

The most detailed portion of the contract, Pearlman said, focused on personnel issues. Namely, what would become of Kodak's IS personnel when IBM took over operations?

Basically, the contract made provisions for these workers to be hired by IBM. Out of a total of 700 workers picked up by the service providers, 300 left to work for IBM.

The bulk of the detail in the personnel portion of the contract surrounded requirements of the Employee Retirement Income Security Act and pension accounting matters, which are very complicated.

"In order to be sure that the amounts to be transferred were properly calculated, [when an employee left to work for IBM], the language had to be very detailed," Pearlman said.

EXECUTIVE TRACK

David W. Braun Jr. has been named director of information services at **Amway Corp.**, a $2.2 billion home products company based in Ada, Mich., with 1 million independent distributors in the U.S. and abroad.

Braun is responsible for Amway's telecommunications department and information center, which includes personal computers, computer networks and end-user access to data.

Braun was most recently director of information management at British Petroleum Co. PLC's Cleveland office. His previous positions in information systems and telecommunications management included statistician and computer manager at Memorial Sloan-Kettering Cancer Center in New York.

Braun holds a Ph.D. in statistical science from the department of computer science at the State University of New York at Buffalo. He also served as a cryptolinguist while stationed in Cyprus as a sergeant in the U.S. Marine Corps.

……

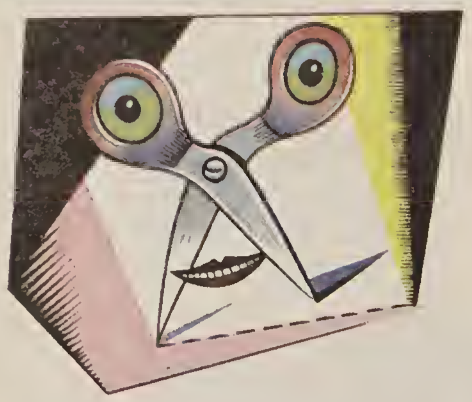
Robert K. Malik has been appointed senior vice president of the Technology and Staff Services Division at **Lincoln National Life Corp.** in Fort Wayne, Ind.

He is responsible for information technology, business systems development, telecommunications, data center operations, computer equipment and software acquisition and strategic technology planning for Lincoln National Life, one of the 20 largest life insurance carriers in the U.S.

Malik was formerly responsible for the development and implementation of systems strategies in several business groups at The Travelers Corp. in Hartford, Conn. Before that, he worked in business and systems positions at Cigna Corp., Touche Ross & Co., W. R. Grace Co. and Mobil Oil Corp.

Malik holds a bachelor's degree from Hofstra University and a master's degree in computer science from Pratt Institute of Technology.

CLIPS



Tim Lewis

Summaries from leading scientific and management journals

"Telcot: An application of information technology for competitive advantage in the cotton industry"

By Darryl Lindsey, Paul H. Cheney, George M. Kasper and Blake Ives

MIS Quarterly
December 1990

■ As producer of roughly 10% of the world's cotton, the Plains Cotton Cooperative Association (PCCA) in Lubbock, Texas, had to find an efficient vehicle to market the cotton produced by its members. In 1975, the first version of Telcot was produced as a marketing system. Today, the computer-based system provides cotton traders with functions much like those available to traders on the New York Stock Exchange.

The way the system works is simple. Any PCCA member can offer his cotton over Telcot using a number of trading alternatives. Market information is also available. Members can display current market value for their lots of cotton and view information such as lots that have recently sold, their quality characteristics and the price per pound paid by the buyer. This helps farmers immediately assess the value of their crops based on actual trading. Approximately 40 buyers are online with Telcot at any given time.

Telcot's features include the following capabilities: firm offer, where members can offer their cotton to buyers at a firm asking price; automated counter offer, which gives buyers a quick opportunity to counter firm offers; buyer selection, which allows buyers to specify only the cotton they wish to buy; and monitor summary, which displays the prices of all trades to everyone on the system.

Telcot is run on a leased IBM 3090 mainframe over 65G bytes of direct-access storage device, a 3725 front-end processor and thousands of miles of telephone lines.

The success of Telcot is a clear illustration of how small organizations can use information technology for competitive advantage. — *Kelly E. Dwyer*

"Outsourcing as a mechanism of information technology governance: A cross-sectional analysis of its determinants"

By Lawrence Loh and N. Venkatraman

MIT working paper
March 1991

■ Poor business performance and high dependence on debt financing lead to a higher degree of information technology outsourcing, according to a study of 57 U.S. corporations.

When profits are low, companies are more likely to make drastic restructuring moves, perhaps to prove to capital markets that corporate management has a strong commitment to improving the firm. Also, unlike in-house operations with their fixed costs, outsourcing gives firms the advantage of variable costs.

Outsourcing is also a way for companies to mitigate debt financing. Increased debt has been a major impetus for cutting cost in the information systems area, thus supporting the use of outsourcing. Companies can search out experienced, low-cost providers through the bid process and subsequent contract negotiations. — *Lory Zottola*

"Mergers and acquisitions: Their impact on the IS department"

By Norbert J. Kubilus

Journal of Information Systems Management
Spring 1991

■ The information systems department in the typical company is more likely to face a merger or acquisition than to deal with a fire, yet many IS departments are ill-prepared to handle a merger.

As part of their regular chores, IS managers should maintain a well-documented technical architecture, keep customization of vendor-supplied software to a minimum, and negotiate vendor contracts that permit the transfer of rights to new owners.

The documentation will be invaluable during the premerger research stage. IS has always been the business function least studied before mergers but asking the right IS-related questions can save time, money and headaches. If senior management is not asking the IS questions — and it probably is not — the IS manager should take the initiative.

When a merger is announced, managers must give the IS staff all the details, such as how the transition will be managed and any job changes. — *Mitch Betts*

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CIOs say downsizing is in the cards

BY CLINTON WILDER
CW STAFF

LAS VEGAS — Amid the desert sun and glittering neon here, two leading information systems executives from the financial services industry mapped a future of decentralizing and downsizing at last week's Association for Systems Management (ASM) annual conference.

In separate presentations at ASM's executive issues forum, Chief Information Officers John J. Alexander Jr. of Unum Life Insurance Co. and Charles H. Mayer of The First Boston Corp. shared their companies' plans for technological and organizational change. Although Alexander focused on software development and Mayer on corporate structure, both had a similar message: Small is beautiful.

"Five years from now, we will wonder how anyone ran an organization on a centralized 3090," Mayer said.

Although New York-based First Boston currently runs three IBM 3090 Model 500Js in its New Jersey data center, Mayer said he believes large Unix-based servers from vendors such as Pyramid Technology Corp. and Sequent Computer Systems, Inc. could eventually take over the mainframe role at the departmental level.

Organizational change

First Boston is also considering outsourcing its data center operations and voice and data communications to IBM. Organizationally, Mayer has created four new "business unit CIO" positions since taking over the top IS post at First Boston seven months ago. Each manager heads IS for a business division — the divisions are fixed income securities, equities, investment banking and back-office support. They currently report to Mayer, although that could change.

"I don't think it makes that much difference where they report," Mayer said.

The goal of delegated IS authority, first and foremost, is the decentralization of systems development, Mayer said. Technical software experts will remain centralized, but they can be called upon by any of the business units as needed.

Developing applications at the business unit level will also promote more cross-functional skills-sharing between business and IS, Mayer suggested. In addition to more effective development, the process opens up career paths.

"We're teaching technical people the business so that they can also become traders, salesmen or investment bankers," he said. "On the other side, we are hiring more technical graduates and electrical engineering majors as traders."

At Portland, Maine-based Unum, more and more systems development has moved to the personal computer. "We'd like to reach a point where it is impossible to conceive of development on the 3270," Alexander said.

Working with software productivity consultant T. Capers Jones, Unum has estimated that traditional mainframe-based development was costing Unum users between $2,000 and $25,000 per month in chargeback costs. Developing mainframe applications on IBM Personal System/2s cut those charges in half, and developing local-area network-based applications on the PC reduced the charge to roughly $200 per month.

"Whatever [applications] you can move to the micro platform, you should do so," Alexander told ASM members.

On the other hand, Unum does have a large suite of CICS, Cobol and VSAM-based mainframe applications with an average age of 10 years. One system supporting Unum's life insurance business, which it has since exited, dates back to 1970, Alexander said.

Unum, IBM's first customer for the AD/Cycle development environment, hopes to see full availability of the IBM Repository by 1993, Alexander said.

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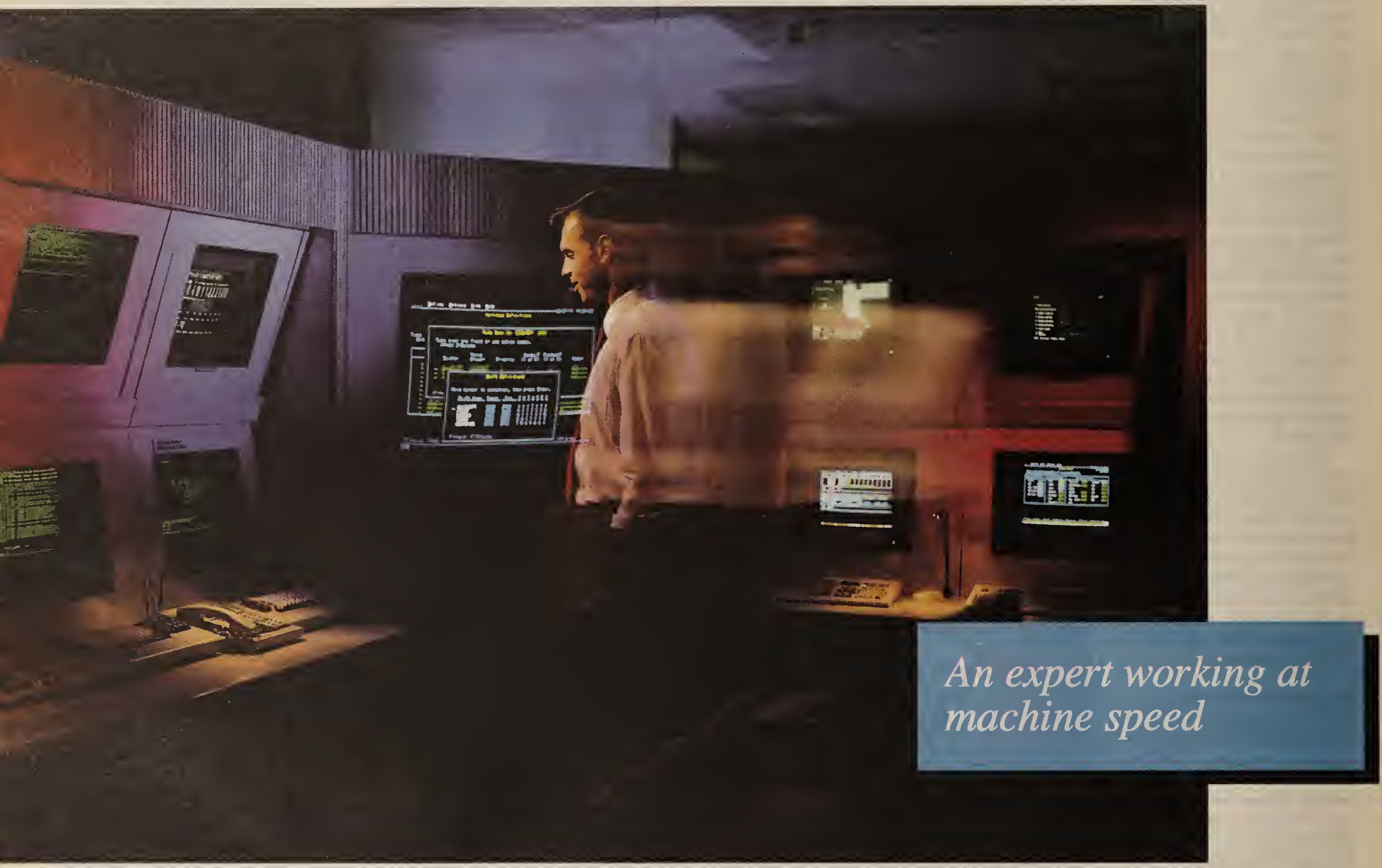

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VDT

CONTINUED FROM PAGE 63

ever, is tricky. "If you work with a furniture salesman who calls himself an ergonomist, you're going to buy more furniture than you need," said Tom E. Signore, a consulting ergonomist based in San Francisco. With a little work, most managers can do a credible job of instituting ergonomic workstations for employees, he said, "but most companies want one-stop shopping — someone to find the furniture, redo the lighting and train employees — and that doesn't really exist yet."

Even San Francisco's municipal IS manager, Judy Johnston, director of the controller's information services division, is unsure whether to use designers or ergonomists or to attempt to manage the change in-house. She is coordinating the effort for San Francisco's 4,000-plus VDT workers.

"We're working with purchasing departments so they don't go about it in a piecemeal way," Johnston said. She said that so far, it was not clear whether she needed an ergonomist or if she was hemmed in by a certain budget. "It's a matter of sitting down [with the health department] and figuring what kind of substance we need to buy. What furniture, hand rests and the like."

A local government VDT committee, which has yet to be finalized, will be interpreting the law and setting guidelines for businesses during the next year. Companies have a four-year lead time to comply with the ordinance. The health department is putting together a list of vendors but refuses to endorse any of them, according to Bill Lee, director of health and safety for San Francisco. The city is also holding training classes for businesses.

Molly McMurray, corporate facilities project manager at World Savings and Loan Association in Oakland, Calif., is assembling ergonomic designs for her company. "The key is having flexible furniture to make sure you meet potential legal guidelines," she said. Like most of the IS managers in IDG's survey, World Savings is outside of San Francisco County and is not required to provide an ergonomic workplace, but McMurray said the writing is on the wall. She has been asking San Francisco businesses what they are doing to comply with the ordinance. "We'd rather figure it out now than later."

Figuring out workplace design is a step — but only part of the equation, according to Don Morelli, an ergonomist based in San Carlos, Calif. The other part is getting VDT users to accustom themselves to new surroundings. "A company can spend $500 on a chair with all the bells and whistles, but employees might not bother with it," he said. "The last line of implementation is with the user."

Morelli said that getting employees to take advantage of ergonomic furniture and otherwise protect themselves is even more elusive than training them. A manager has to imbue employees with responsibility for their own well-being.

The hunt for ergonomists

Got a backache but don't know a good chiropractor? When weeding the quacks from the docs, a good rule is to look for professional membership — for example, in the American Chiropractic Association.

If you are a manager who needs a professional ergonomist to fix poor working conditions for your staff, particularly those working at VDTs, where do you look? There is no professional ergonomists' association, and there are only about 300 professional ergonomists in the entire U.S.

Linda Morse, director of the Repetitive Motion Institute in Santa Clara, Calif., suggested that managers first get a copy of a prospective ergonomist's resume or curriculum vitae and look for formal coursework in ergonomics. The ergonomist could also be an industrial hygienist, a nurse, nurse practitioner or physician. However, Morse advised asking the latter three about specific ergonomics-related coursework. She also recommended the physical and occupational therapy departments of colleges for firms outside of urban areas.

Where and at what level an ergonomist received training could also be important, according to Morse. While some may have taken college-level classes, others may have actually worked alongside ergonomists in on-the-job training.

Lastly, Morse suggested asking for references. "Act like you are going to hire an employee. Call up the references and ask whether they followed through on the work, if they produced usable solutions and whether employee health problems have been ameliorated."

Professional ergonomists warned there are a growing number of well-meaning people who set themselves up as ergonomists but are not. This, they said, is particularly true of salespeople. "Be careful when they try to sell you one product, like a glare screen, as a solution for everything," said Don Morelli, an ergonomist in San Carlos, Calif.

J. A. SAVAGE

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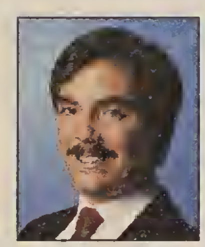
COMMENTARY

Clinton Wilder

No more easy answers



Uncertainty reigns as the IS management profession hurtles into the recession-plagued global economy of the 1990s. Do not look for guideposts or definitive answers to the challenges facing you because they don't exist anymore.

Almost every traditionally accepted rule in IS management can be turned on its head. One of the first to go was "No one ever got fired for buying IBM," but the list goes on. What used to be a mark of competence may now be considered bad and vice versa — all depending on the circumstances.

A chronicler of our time, Woody Allen, made this same point. In the film *Annie Hall,* Woody's pal is trying to sell the dyed-in-the-wool New Yorker on the virtues of southern California, one of which is sunshine. "But sun is bad for you," Woody retorts. "Don't you understand that everything our parents said was good for us is bad? Sunshine, red meat, college?"

Actually, if it were that simple, life in IS would be easier — if you could be assured of keeping your job by not buying IBM, for example. Unfortunately, life in IS today seems more like an unending procession of gray areas, with everything dependent on circumstances — your company's financial health, your relationship with top management and end users, the age of your applications base and more.

Try to answer the question "good or bad?" for each of the following maxims:

- **Cut IS spending.** Good idea during a recession, right? Not necessarily. Many analysts say this is the best time to beef up applications development or modernize IS infrastructure so that your company can capitalize on IS-enabled capabilities the moment the economy picks up. On the other hand, it's no time to put in the capital request for that new Cray that you've heard is not just for scientific calculations anymore.
- **Be the leader in implementing leading-edge technology.** I suppose the question of whether to be on the leading (or is it bleeding?) edge has always been controversial, but never more so than now. Obviously, it costs money. But if we are talking about imaging, expert systems, point-of-sale data capture or other technologies, many leading-edge products can reap instant benefits and very fast paybacks.
- **Consolidate IS resources to exercise better control and gain economies of scale.** Scores of companies are consolidating data centers and saving big bucks, but caution is the watchword: Beware of the return of centralized, monolithic, unresponsive IS.
- **Outsourcing means internal IS has failed to do the job.** Very true in some cases, but what about the roster of IS executives who are heroes to their upper management because of wise outsourcing decisions? Again, whether it is good or bad depends on the circumstances. In the case of many outsourcing contracts, the company may not even know if the experience is positive or negative for several years to come.

> WHAT USED TO be a mark of competence may now be considered bad and vice versa — all depending on the circumstances.

- **Be a bold leader in IS.** This one is perhaps the hardest of all to get a handle on. Obviously, the days of achieving career success by hiding in the glass house away from business management are long gone. But IS managers who forge boldly ahead into the future without working in lockstep with the business management team are headed right out the door.

Suppose business management is resistant to the direction in which IS leadership wants to go? Tact, skillful communication and mastering the art of corporate politics come into play here. But if you're looking for easy-to-read guideposts and pat answers, it may be time to consider another profession.

You have heard it before: The importance of information technology to business success has given IS professionals unprecedented opportunities to make a difference — and, not coincidentally, to make a lot more money. With all of that, however, comes unprecedented opportunities for failure.

Greater rewards, greater risks. That demands being proactive, open, intelligent and, above all, flexible. Because the era of unassailable truths in IS is over.

Wilder is *Computerworld*'s senior editor, management.

CALENDAR

Guide 80, "IS: The Next Generation," will take a look at IS in the year 2000. The conference will be held July 14-19 in Boston.

Keynote speaker John Imlay, chairman of Dun & Bradstreet Software, will deliver a speech entitled "From Computing Power to Competing Power."

For information or to register, contact Guide Headquarters, Chicago, Ill. (312) 644-6610.

JUNE 2-8

Building Systems Automation-Integration Symposium. Madison, Wis., June 2-8 — Contact: Charles E. Dorgon, University of Wisconsin at Madison (608) 262-8220.

The IRM Imperative. Arlington, Va., June 3-5 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

Information Management: The Next Generation. Orlando, Fla., June 4-6 — Contact: Delphi Consulting Group, Boston, Mass. (617) 247-1511.

Systems Integration Exposition and Conference. Rosemont, Ill., June 4-6 — Contact: Sandi Eberhard, Eberhard & Co., New York, N.Y. (212) 557-6950.

Voice Systems Worldwide 1991. Kensington, England, June 4-6 — Contact: Media Dimensions, Inc., New York, N.Y. (212) 533-7481.

Techconnect Washington, D.C. Washington, D.C., June 4-6 — Contact: Techconnect Washington, D.C., Austin, Texas (512) 343-9066.

JUNE 9-15

Computer Security Institute. Denver, June 10-12 — Contact: Computer Security Institute, San Francisco, Calif. (415) 267-7651.

Experts on Networks. Washington, D.C., June 10-12 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

FDDI Executive Symposium. Sunnyvale, Calif., June 11-12 — Contact: Joan Marie McArdle, Events Management International, Marshfield, Mass. (617) 834-4703.

EDI: Steps for Success. Atlanta, June 11-13 — Contact: Sharon Scott, Inforum, Atlanta, Ga. (404) 220-2692.

Strategic Planning for Information and Systems. Chicago, June 12-14 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

Windows 3.0 Developers Conference. Tyngsboro, Mass., June 12-14 — Contact: Andree Fontaine, Boston University Corporate Education Center, Tyngsboro, Mass. (508) 649-9731.

The Bynet User Group. Orlando, Fla., June 13-14 — Contact: Christine Seale, Bytex Corp., Southboro, Mass. (508) 480-0840.

JUNE 16-22

National Educational Computing Conference. Phoenix, June 16-20 — Contact: Southwest Events, Scottsdale, Ariz. (602) 991-5131.

MIT Center for Information Systems Research Summer Session. Cambridge, Mass., June 17-20 — Contact: CISR, Cambridge, Mass. (617) 253-6657.

Testing Computer Software. Washington, D.C., June 17-20 — Contact: U.S. Professional Development Institute, Silver Spring, Md. (301) 445-4400.

Engineering Systems Design and Analysis Conference. Istanbul, Turkey, June 17-20 — Contact: The American Society of Mechanical Engineers, Dallas, Texas (214) 746-4901.

Imaging at Work '91. Tyngsboro, Mass., June 17-20 — Contact: Boston University Corporate Education Center, Tyngsboro, Mass. (508) 649-9731.

International Trade Computerization Conference. Washington, D.C., June 18-19 — Contact: NCITD, New York, N.Y. (212) 925-1400.

Videotex Industry Association Conference and Exposition. Washington, D.C., June 18-21 — Contact: Debbie Tritle, Videotex Industry Association, Silver Spring, Md. (301) 495-4955.

Downsizing in the Computer Industry: Making the Migration from Reliance on Mainframe to Distributed Processing in the Mini, PC and LAN Environment. New York, June 19-20 — Contact: Institute for International Research, New York, N.Y. (212) 826-1260.

Intelevent '91. Hong Kong, June 19-20 — Contact: International Televent, McLean, Va. (703) 556-7778.

HL7 Working Group Meeting. Malvern, Pa., June 19-21 — Contact: Sue West, SMS, Malvern, Pa. (215) 251-3164.

Supercomputing 1991 USA/Pacific. Santa Clara, Calif., June 19-21 — Contact: John Derryberry, Angus & Rudin, Inc., Redwood City, Calif. (415) 363-0982.

Mac Hack '91. Ann Arbor, Mich., June 19-22 — Contact: Conference Management Expotech, Inc., Grosse Pointe Park, Mich. (313) 882-1824.

Document Image Processing Symposium. Toronto, June 20-21 — Contact: C. J. Howse, Price Waterhouse, Toronto, Ontario (416) 863-1133.

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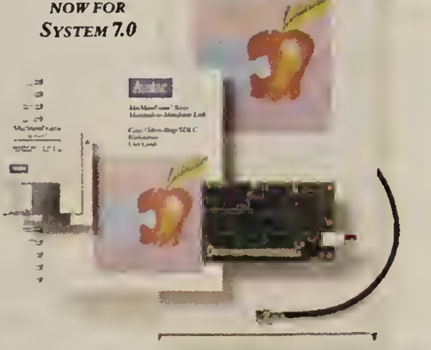

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Improve it or lose it

Rising money and user pressures mean data centers must shape up or . . .

Kenneth Chen

Germann says *by moving to New Jersey, Ernst & Young 'could attract higher quality people who didn't want to go into New York'*

BY ALAN RADDING

Many data centers today have arrived at a crossroads: They must improve or die.

Faced with flat or declining budgets, increased user service demands and outsourcing alternatives, many information systems departments are wrestling with a strong mandate to do more with less — or else.

"We are being asked [by internal IS groups] how to make the data center more efficient," says John Ebersole, managing consultant at Index Group, Inc. in Cambridge, Mass. "But at the same time, management asks, 'Should we be doing this at all?' "

Indeed, with their multimillion dollar budgets, data centers are big, juicy targets for cutbacks. Worse, there's evidence that data center productivity has peaked in many cases, thanks to automation.

Of course, many of the pressures facing data centers aren't really new; they're just heightened. "The problems haven't changed, except the economy is a lot worse," says Leonard Eckhaus, president of the Association for Computer Operations Management in Orange, Calif.

The tougher economy has left many data centers with two choices, according to consultants and IS managers: Shape up or outsource. Today, "shaping up" most often means relocating, consolidating and automating.

"You have to automate to become more efficient and consolidate to achieve economy of scale. If you can't, then outsource," says Michael Connolly, senior manager at Nolan, Norton & Co., a Lexington, Mass.-based consultancy.

To cope with performance and financial pressures, IS organizations have successfully adopted several strategies. A brief look at some proven approaches follows.

Ernst & Young relocates

From a technical standpoint, the simplest strategy is relocation, according to Thomas Lalor Jr., president of St. John's Consulting Group, Inc. in Westfield, N.J. Moving data centers can offer big paybacks in cost savings and improved performance, Lalor says.

Low-cost, high-speed telecommunications makes it practical to move the data center out of the high-cost, metropolitan headquarters location.

"Now you can put the hardware in a geographically optimal location," while applications development and support people can remain at headquarters, where they work directly with users, Lalor says.

Other payoffs include reductions in rent, utility costs, taxes and even salaries, thanks to the generally lower cost of living outside of major urban areas. Lower living costs often make it possible to attract quality people for less money, consultants say.

The former Arthur Young, now known as Ernst & Young, an accounting and consulting firm, relocated its data center and applications development from New York's borough of Manhattan to New Jersey and saw immediate benefits.

"That put us into a lower rent district, and we could attract higher quality people who didn't want to go into New York City," explains George Germann, national director of MIS at Ernst & Young in Lynnhurst, N.J.

Utility bills have dropped 40%, and annual savings from the relocation approach about $1 million, Germann says. He adds that the company recouped moving costs during the first year.

There are other benefits, too: Germann and other workers say they don't miss the Manhattan grind. They also enjoy shorter commuting times, less downtime and improved morale.

Ernst & Young picked its new location carefully. "We wanted to be close enough to New York so that we would have no trouble attracting talented people from there," Germann explains.

Even so, about 80% of the New York-based staff left during the first 1½ years. But, Germann

Continued on page 72

Data Center Efficiency

Key points

- ▶Growing financial and user pressures have forced data centers to improve or face outsourcing.
- ▶Popular options for boosting efficiency include relocating from urban areas, sharing facilities, consolidating and automating.
- ▶Some data centers hire outside consultants to analyze operations and find out how they stack up against others (see story page 75).
- ▶Bigger isn't necessarily better. Experts say data center efficiency starts to level out at about 160 million instructions per second (see story page 76).
- ▶Brief case studies include The Chase Manhattan Bank NA, Physicians Mutual and Life Insurance Co. and Yale School of Medicine (see story at left).
- ▶QUOTABLE:

"The problems haven't changed, except the economy is a lot worse."

LEONARD ECKHAUS
ASSOCIATION FOR COMPUTER OPERATIONS MANAGEMENT

Continued from page 71

adds, "If we had moved *really* far away, they would have left the first day."

The trick to preventing immediate panic flight by the staff, Germann says, is honesty. He advises: "You have to recognize that this kind of thing affects lives. As soon as rumors start to circulate, you have to be up front with everybody."

The company informed everyone about the move at the same time and assured them they would be able to keep their jobs.

Also, planners stressed that the move wasn't actually that far from Manhattan and permitted "reverse commuting" against the traffic.

Because costs were lower and space was plentiful, the new data center was built to accommodate growth, "which proved to be very fortunate three years later when we merged with Ernst & Whinney," Germann notes.

The merged data centers were consolidated into the Lynnhurst site, resulting in a 25% reduction of the total staff.

Today, Ernst & Young "automates as much as possible" in a drive toward lights-out operation, according to Germann.

Yale shares facilities

A new twist on the relocation theme is the idea of shared facilities. The basic strategy is to join two organizations that are related or friendly to save money on redundancy, power and environmental systems.

Yale School of Medicine in New Haven, Conn., for example, built a new data center shared by three separate systems groups in hopes of gaining some of the efficiencies of consolidation without actually implementing it.

The three School of Medicine data centers share a single computer room and staff, but they keep their own computers, says Howard Newstadt, assistant director for financial affairs at Yale School of Medicine. Two IBM Application System/400s handle clinical and administrative tasks, while a Digital Equipment Corp. VAX 8800 is used for academic applications.

Previously, clinical IS, medical administration and biomedical computing each had separate systems, facilities and staffs, Newstadt explains.

Now, the groups also share related services, such as an office services group and the report distribution operation. Committees are still working out the best way to assess actual costs, but Newstadt says he expects the costs will be split equally among the three centers.

The main goal of sharing was not to reduce the head count, Newstadt explains — "We're in a high growth phase," he says — but rather to stem future personnel increases. "It's a way to control long-term costs, not reduce current costs," Newstadt says.

The school will also join Yale New Haven Hospital later this spring to share power, backup and environmental systems.

School officials say they expect that the move will help data center operations become even more efficient because facilities will be shared with the hospital data center located in the same building. Cost allocation between the school and hospital will be prorated based on the amount of service used by each.

The organizations will share a large backup power generator, environmental systems and the halon exhaust system. "We each have our own halon system, but we share the exhaust system," Newstadt explains.

"There are some immediate cost savings, but the real advantage is if we had stayed on our own, we would not have invested in as good a backup system," he says.

Chase consolidates

The Chase Manhattan Bank NA consolidated four data centers, combining two from New York and one from Lexington, Mass., into its Lake Success, N.Y., site. As part of an effort to get better economy of scale, reduce overhead and improve operational efficiency, the bank also embarked on a major automation project.

"Our goals were to improve quality

Avoid these deadly mistakes

Experts say mistakes in capacity planning and failure to consolidate and automate are the biggest drags on data center performance.

Specifically, the problems are as follows:

- **Doing too much too early.** One of the most common gaffes is early installation of new equipment, which provides high capacity long before it's needed. Being a few months premature isn't a problem, experts say, but some organizations jump the gun by 18 months.

So by the time organizations really need the new high-capacity equipment, not only have they overpaid, but the equipment may also be obsolete.

- **Failing to consolidate.** Another common problem is ignoring the need to consolidate. Large organizations with four, eight, 10 or more data centers can realize tremendous savings simply by combining operations, experts say.
- **Underautomating.** Several problems, including overstaffing, can be blamed on the failure to take advantage of automation tools.

Quality often suffers without automation, experts say. By removing the potential for human error, data center performance and efficiency often rise while costs plummet.

ALAN RADDING

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and reduce the head count, and we have done that," says Tony Graziano, manager of technology planning at Chase Infoserve International, a service subsidiary of Chase Manhattan.

While Graziano declines to provide specific numbers, he says Chase Manhattan's consolidated data center costs less than the combined costs of the individual data centers. And although the data center budget continues to grow, he adds, it's not growing as fast as in the past.

Staff has been reduced to the point at which it nears lights-out efficiency in parts of the data center, Graziano says. No one was laid off as a result of the consolidation, he adds. Instead, people were moved into technical support positions.

The shop runs two IBM 3090J machines with 700G bytes of direct-access storage. It has a staff of 63 in direct operations — a number Graziano plans to reduce through automation. "We hope to shift some of those people into support and services to supplement technical areas," he says.

Graziano advises would-be consolidators to standardize hardware and software, especially the latter. "Hardware is not as hard to consolidate as software," he says, adding that Chase Manhattan is still converting to a standard software platform.

"This was not a onetime project. It's effective management, a part of an ongoing process," he says.

"Automation is necessary for survival," declares Arnold Farber, president

Continued on page 74

DATA CENTER SAVERS

PROBLEM	ACTION	BENEFIT	DRAWBACK
Deteriorating urban infrastructures	• Relocate	• Eliminates problem • Attractive return on investment	• Logistically complex • Temporary disruption risk • Significant investment
Tighter capital budgets	• Software to reduce equipment needs	• Savings vary	• Some solutions labor-intensive or cumbersome
	• Share facilities	• Significant operating and capital savings	• Difficult to find satisfactory partnership
Higher reliability requirements	• Facility capacity planning and service-level analysis	• Savings vary	• Increased demands on technical planners and close cooperation with facility planners/engineers
	• Lights-out operations	• Significant operating and capital savings	• Work flows and cable-length restrictions complicate layouts and designs
Rising facility costs	• Remote data centers	• Attractive return on investment • Large operating savings after large capital investment	• Major undertaking with risks of temporary disruptions and major personnel issues • Logistically complex
	• Energy-saving equipment	• Significant savings requiring significant capital investment	• Cutovers of environmental systems are complex and involve significant risk
Budget crunches and belt tightening	• Hire consultant	• Attractive return on investment with fast results	• Finding the right consultant and limiting the scope of study to yield fast return on investment
	• Outsourcing	• Savings vary	• Long-term consequences include reduced control over technical direction • Difficulty of reversing decision in the future
	• Labor- and space-saving technologies	• Savings vary	• Advanced technologies require more highly skilled technicians, offsetting some labor reduction savings

Source: St. John's Consulting Group, Inc.

CW Chart: Doreen St. John

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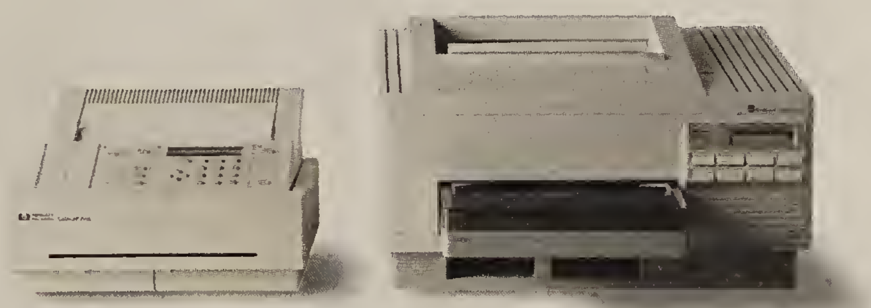

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HEWLETT PACKARD

Continued from page 73

of Farber/LaChance, Inc., an automation consultancy based in Richmond, Va. But he and others caution that there are limits to what automation can do.

That observation is backed up by Connolly, who headed Nolan, Norton's new annual data center study. "This year, we noticed data center productivity leveling out," Connolly says. The falloff, he explains, appears to be because of automated operations.

Some large data centers that had been automated in the past are now experiencing flattened efficiency, mostly because the efficiency gains from automation have hit a wall, according to Connolly.

Physicians automates

However, smaller data centers that aren't as far along in the automation life cycle can continue to see productivity gains, Connolly reports.

Physicians Mutual and Life Insurance Co. in Omaha, Neb., embarked on its automation drive six years ago and still sees room for improvement. "Our goal is to eliminate as much human intervention as possible," says Bob Jones, technical service manager.

> AUTOMATION CAN BE expensive, especially at the start.

The company has experienced a dramatic increase in computer utilization. "We're keeping the machine busy 99% to 100% of the time, and our response time is less than half a second," Jones notes.

Physicians Mutual's data center runs a Hitachi Data Systems Corp. machine equivalent to an IBM 3090J. The system requires only two operators and one tape librarian per shift (only one operator overnight) through the use of automation.

During the six years the company has been automating, its processing capability has grown from 18 million instructions per second (MIPS) to 50 MIPS without adding a single operations person, Jones reports.

So far, Physicians Mutual has concentrated on automating computer operations, which eliminates the need for human response to systems messages. It also uses performance management tools that constantly tune the system and a systems analyzer that monitors systems status and performs diagnostics. In addition, the company uses hardware utilization software for direct-access storage device management.

Automation can be expensive, though, especially at the start, Jones says. Automation tools from Candle Corp., Computer Associates International, Inc. and IBM "were a big hit to the budget when we brought them in," he says, but they eventually helped reduce overtime costs and improved hardware utilization.

"Now we don't have to upgrade as soon," Jones notes. With the help of automation, Physicians Mutual's data center operating budget has increased only 5% annually, despite dramatically increased work loads, he adds.

As a next step, Physicians Mutual will add Candle's remote automation tool, which will let the mainframe run unattended.

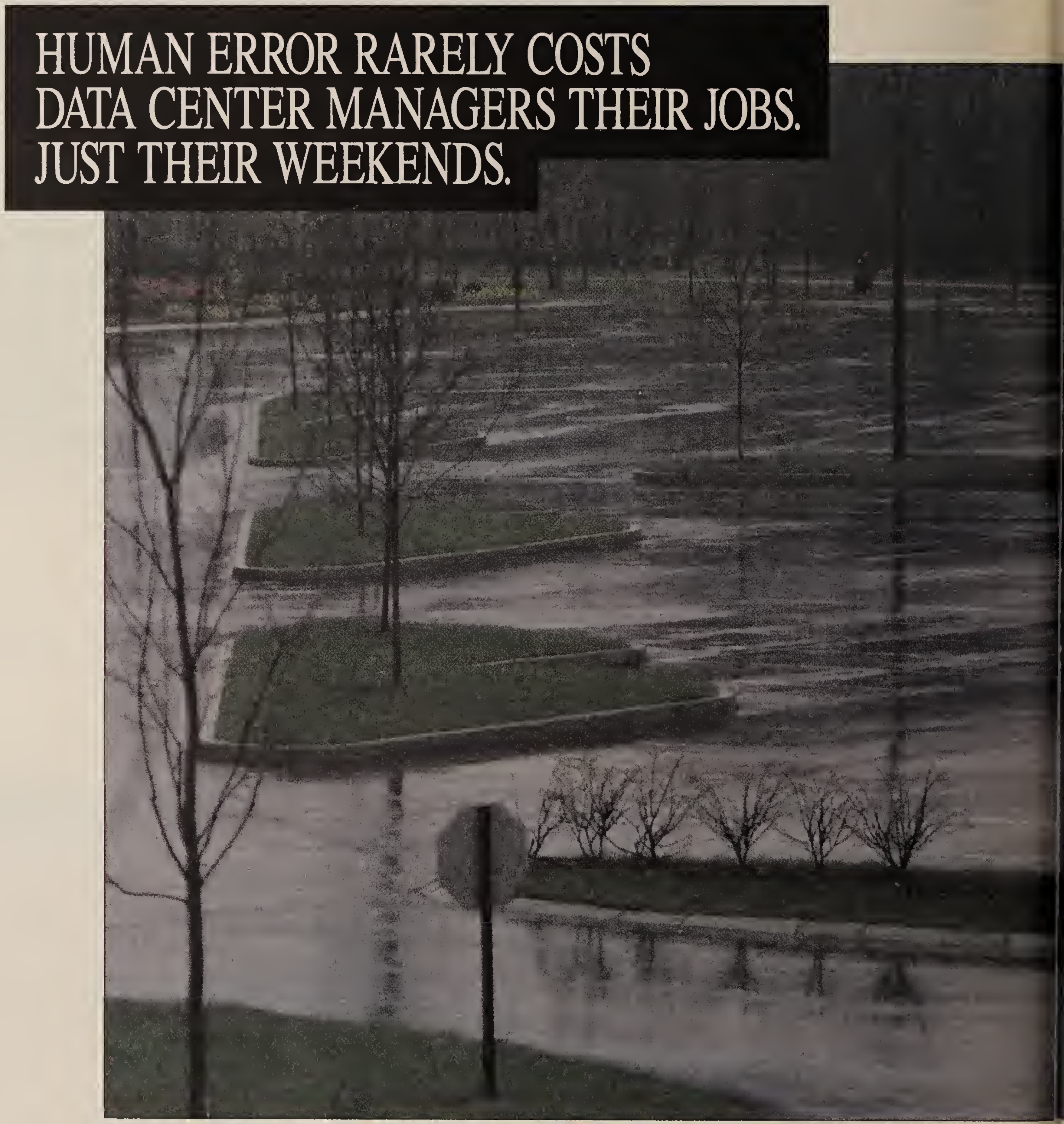
"The remote tool will talk to the automated operator tool. If there is some unique problem, it will notify an individual by phone," Jones explains. The live operator can respond to the problem using a personal computer from home.

"Eventually, we'd like to get to lights-out operation overnight and on weekends," he adds.

Ultimately, Physicians Mutual would like to automate tape handling and report distribution.

Ironically, during the automation drive, Physicians Mutual moved the data center to a bigger space because of larger anticipated work loads. The work load did increase, but without additional personnel, the extra space was unnecessary. "Because of the automation, we're using fewer people than we expected," Jones says. ●

Radding is a free-lance writer based in Newton, Mass.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Does your data center measure up?

IS managers increasingly turn to consultants to rate their performance

BY ALAN RADDING

Rather than relying on seat-of-the-pants judgments, some information systems managers are turning to firms that can help them compare their data center performance against that of their peers.

Nolan, Norton & Co., Compass America, Inc. and Real Decisions Corp. are among the best-known firms that offer IS organizations comparative data center information.

Such consultants pitch themselves as desirable alternatives to outsourcing. Without solid information, they argue, data centers either overcompensate or get caught short. Data center measurement is a key part of a large corporate effort to measure IS performance and payoffs (see story page 81).

While methods vary, these vendors typically analyze computer-generated activity reports, the nature of the work load and the data center's own financial, staffing and operational records. This process usually takes about three months, and vendors charge anywhere from $50,000 to $100,000, depending on the complexity of the analysis.

The results of the study are compared with other companies in the vendor's database, and recommendations are made.

Valuable information

IS managers, in turn, use the performance measurement reports to get a detailed, objective analysis of their operation, identify areas for improvement and show management and users that they're worth the money.

"We charge our users for our services, and we need a way to prove to them that they're getting a competitive rate," says Russ Bohart, director of the California State Health and Welfare data center in Sacramento.

"We were surprised that we came out better than we anticipated," Bohart says.

A Compass study of the data center at Brown Group, Inc., a St. Louis-based shoe manufacturer, also led to several changes.

"They recommended we take action on personnel — something we were already doing — and use more automation," says Lee Peterson, manager of MIS administration. "We thought we were well-automated, but the study showed where we could do more."

Matter of interpretation

Interpreting the results can be tricky, however. For example, when Brown, which has a large retail trade, asked to be compared with a retailing organization instead of another shoe maker, several low marks disappeared, Peterson says.

To ensure that the recommendations have teeth, Brown's management required IS managers to respond to issues raised by the study when annual goals were set.

Henry Ford Health System in Detroit, a $1.1 billion diversified health care organization, avoided a CPU upgrade by doing a performance audit, says Thomas McNulty, senior vice president and chief financial officer.

"We were surprised to discover that our CPU capacity was in good shape, but our storage wasn't," he says. "A storage crunch rather than the suspected CPU capacity created problems with the job stream."

Henry Ford Health System's CPU dilemma is symptomatic of a larger issue addressed by performance measurement. "You never know how much is enough," McNulty says. "You never know when you are OK." ●

And lost weekends are the least of it. Far more costly is the loss of productivity that can result—company wide—when people lack the tools to manage increasingly complex operating environments.

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Getting the best for your buck

IS managers find thorough facility analysis key to efficiency

INSIDE EDGE

BY THOMAS LALOR JR.

Are you getting the most for your data center dollars?

That's a big question today for many information systems managers struggling with tighter budgets, deteriorating infrastructures and escalating facilities costs.

Value-minded IS managers can use a variety of strategies (see table page 73) to get their money's worth. Many of the smartest companies are focusing on physical facilities, environmental systems and capital equipment.

IS managers whose budgets are being cut face a double bind: They need to provide more service while spending less. Capacity planning and service-level analysis can help them make informed trade-offs.

Capacity planning helps managers assess the work load and corresponding need for staff, computers, materials and space. They can then determine the best way to balance capacity with cost. In determining the frequency of paper shipments, for example, they must consider cost, equipment, labor and space.

Service-level analysis focuses on two factors: reliability, or the length of time between failures, and availability, or the duration of failures. For improved reliability, managers identify development redundancies in key areas.

Availability can be improved by shortening downtime. Managers might determine, for example, that they should purchase a service contract or hire more maintenance staff.

Such analysis can help data center managers determine which of the following data center strategies is best for them. They are listed from greatest to least return on investment:

- **Design and build a new facility.** Ideally, the facility should be remotely located in a locale with low taxes, low utility rates and infrastructure-dependent services. It should be designed with energy- and space-saving priorities using lights-out and related design concepts.
- **Improve existing facility.** A more realistic alternative for many organizations is to improve their current facilities with new technologies that save on labor, space and energy.

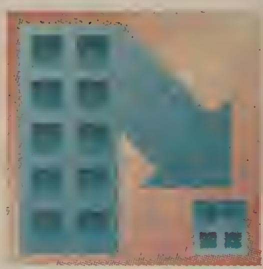
These include tape silos, electronic vaults, continuous paper feeds for laser printers and sophisticated air-conditioning systems and energy-monitoring equipment.

Software tools can reduce equipment needs, and terminal managers can consolidate command centers to reduce personnel, equipment and floor space.

- **Outsource operations.** Outsourcing can provide limited immediate savings, but there are two important caveats: First, the outsourcer's price commitment is typically short term, so it's difficult to determine long-range paybacks. Second, once the technology decisions are handed to the outsourcer, it becomes difficult to backtrack, which will force trade-off decisions. •

Lalor is founder and president of St. John's Consulting Group, Inc., a consulting firm based in Westfield, N.J.

How big is big enough?



What's the optimum size for a data center? Is it 40 million instructions per second (MIPS)? 80 MIPS? 150 MIPS? More?

While opinions vary, data center consultants say bigger isn't always better. "At 160 MIPS, efficiency starts to level out," says Len Bergstrom, executive vice president at Real Decisions Corp. "From 400 MIPS and up, it flattens out quite a bit. Really large shops might even have diseconomies of scale."

Conventional wisdom puts the ideal data center size at 40 to 50 MIPS, a figure experts agree is too low. "We've found the optimum size is at least three times that and increasing — if you have the load to support it," says Thomas Blitz, president of Compass America, Inc., a consulting firm.

For example, The Chase Manhattan Bank NA's consolidated data center is 210 MIPS, just about the ideal size, according to Blitz (see story page 71).

While larger data centers may enjoy even greater efficiency, the gains are less dramatic. "The largest data center we know is 900 MIPS, which is marginally more efficient than 500 MIPS," Blitz says.

Consultants say small data centers can still be efficient, but they must follow different strategies, such as purchasing used equipment.

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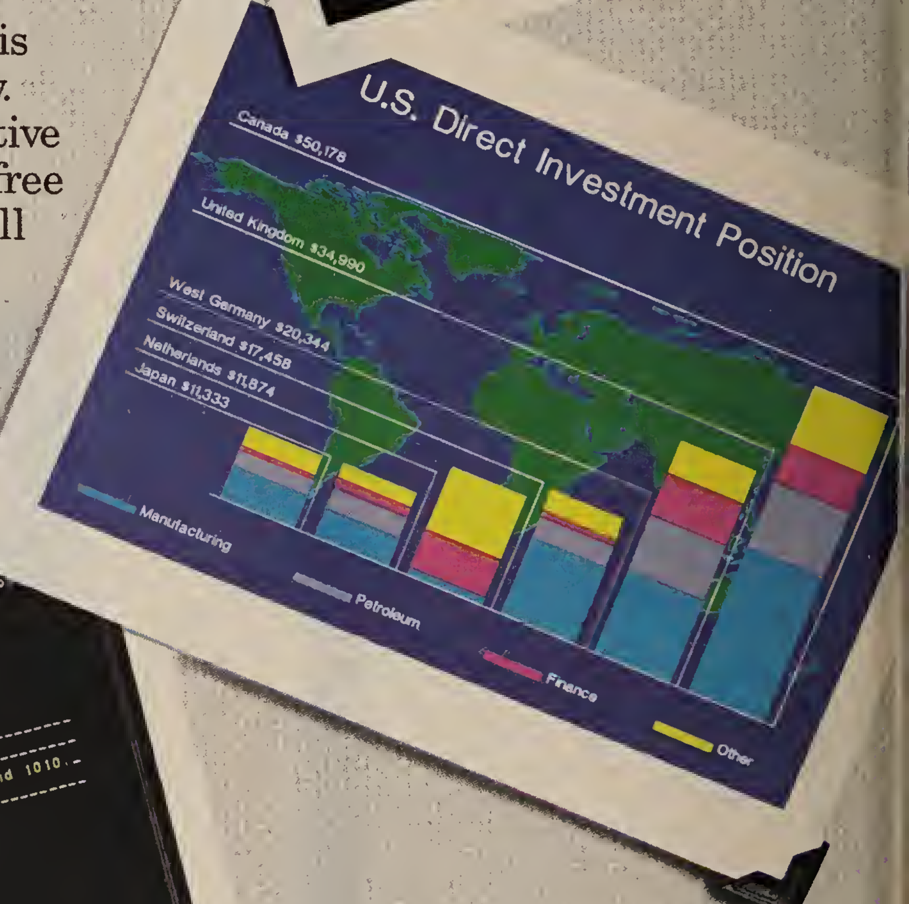

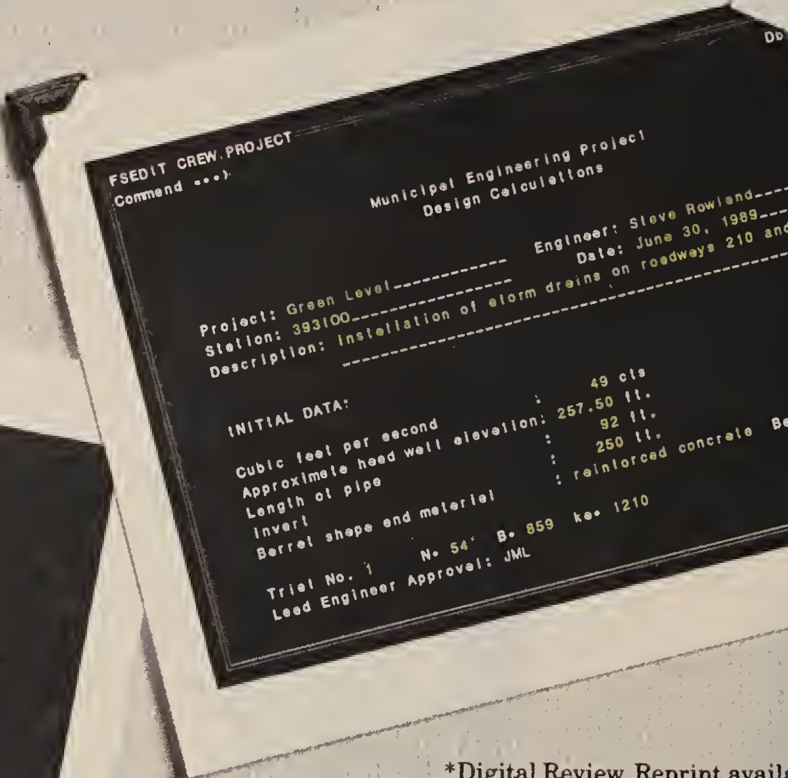

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Project: Green Level                   Date: June 30, 1989
Station: 393100
Description: Installation of storm drains on roadways 210 and 1010.

INITIAL DATA:
Cubic feet per second            :  49 cfs
Approximate head wall elevation: 257.50 ft.
Length of pipe                   :  92 ft.
Invert                           : 250 ft.
Barrel shape and material        : reinforced concrete   Barrel n= 54'

Trial No. 1      N= 54'  B= 859   ke= 1210
Lead Engineer Approval: JML
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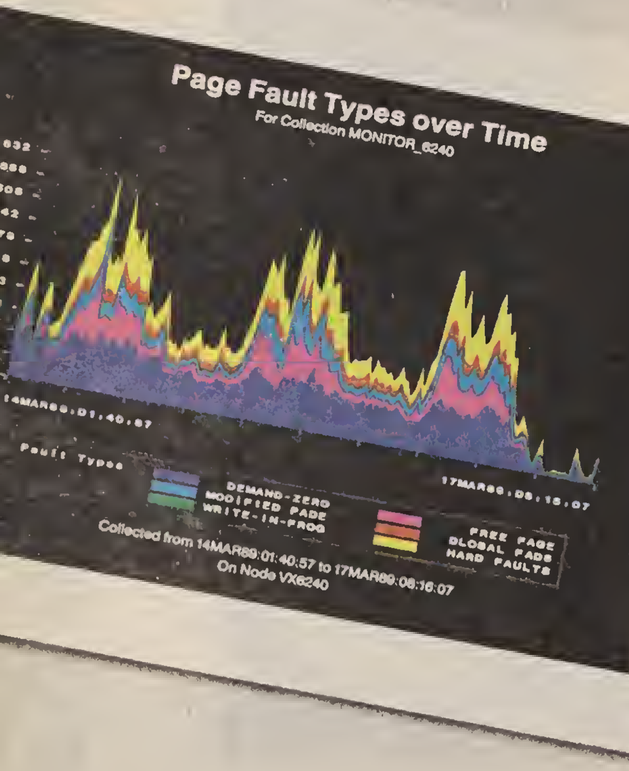

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Is technology worth it?

Assessing the business value of IS is a hot issue in the insurance industry. IS chiefs reveal the ways in which they are justifying IS investments

The first in an occasional series on assessing the value of information technology in vertical industries.

BY MICHAEL L. SULLIVAN-TRAINOR

Pursuing a way to measure the business value of information systems is a lot like seeking the Holy Grail. The path is littered with scattered bits of academic research, with no completely successful measure available. For IS executives, this quest is more than an academic pursuit, however. Without a value measure, how can they convince management of the need for new IS investment?

IS executives in the insurance industry have developed some creative ways to answer that question. While none of their methods represent the ultimate measure of IS business value, they do help the executives persuade bosses and peers to continue investing in IS.

The need for such tools has become pressing. The industry has been experiencing declining profits (down an average of 16% in 1990 for the Top 40 insurance companies) and increased competition from financial service firms offering life insurance. In addition, the ever-present search for new revenue has led to increased market segmentation among the major companies in both the life and property casualty businesses.

Sullivan-Trainor is a *Computerworld* senior editor, features.

Insurance industry measures

Here's what companies are using to gauge IS and its effect on the business

Insurance business performance measures

- Earnings growth
- Return on equity
- Amount of assets under management
- Amount of surplus capital
- Net gain from operations
- Interest-adjusted net product cost
- Market share
- Customer awareness of company

Insurance IS efficiency measures

- Cost displacement
- Cost avoidance
- User productivity gains
- IS expense as a percentage of premium income
- IS expense per unit of user effort
- Network/system availability
- Lines of code produced per work-month
- Industry chargeback statistics

These factors combine to squeeze profit margins and place more emphasis on cost reduction and justification.

"I don't think anybody has a formal process for assessing the business value of IS," says John Pajak, executive vice president at Massachusetts Mutual Life Insurance Co. in Springfield, Mass. "It's quite subjective."

IS a hot item

IS spending is a big-ticket item at the major insurance companies, accounting for more than $2.5 billion in 1990 IS budgets alone. Yet no one claims to know how much revenue or profit was produced by that investment.

To find out how executives determine the value of IS spending despite the lack of a hard measure, *Computerworld* interviewed insurance IS chiefs at a roundtable held at the semiannual Life Office Management Association's (LOMA) Systems Forum in Orlando, Fla. Participants included John Alexander, senior vice president and chief information officer at Unum Life Insurance Co.; Jack Crawford, vice president of information management at ITT Hartford; and Jim Massengale, senior vice president of operations and systems at Protective Life Corp. Pajak was interviewed separately.

All four executives acknowledge they are frequently asked to justify IS expenditures. The questions come from both the chief executive officers to whom they report and the line managers who pay for IS services. Their answers can be divided into two categories: business measures that show an impact on the company's revenue or profit and IS performance measures that reveal processing efficiency and applications quality.

Business measures include the following:

- Industry-specific company performance statistics, such as overall earnings growth and return on equity. These are used to claim success for IS operations, which are deeply woven into the fabric of the insurance industry.
- Cost displacement — the amount of money the company did not have to spend because processes were made more efficient through IS — is used to justify new IS expenditures. This is a business measure in the sense that if IS lowers the company's costs, the company can keep more of its profit.

IS performance measures include the following:

- Chargeback — assigning the cost of data processing services proportionally to each line of business — is the most prevalent way of measuring IS costs. The IS operation is performing more efficiently if it is reducing its chargeback costs.
- Data center costs, which determine efficiency and are viewed as a business necessity by senior management, are compared with insurance industry averages provided by objective third parties. This is perhaps the most quantifiable of all IS performance measures. (For a detailed look at measuring data center efficiency, see Executive Report beginning on page 71.)

Jeff Blanton

IS chiefs *Massengale (left), Crawford (center) and Alexander discuss ways to determine the value of IS*

IS is the business

While these measures help the cause by justifying what's been spent on IS, they do not answer the question of how much bang managers will get for the next buck they spend on new systems initiatives.

"The greatest dilemma we face is that in the past, we have justified the automation investment by determining labor displacement," Crawford says. "Now that we're talking about redesigning the business process, and the technology is so inseparable from the business change, how do we factor it into the benefit determination? It's not strictly labor displacement any longer."

Faced with the absence of hard business value measures for future investments, IS

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managers look at what can be measured. In many cases, that means measuring the business and arguing that IS is so integral to it that business success equals IS effectiveness.

"There used to be a perception that there was a separation between IS and the business, but we can't do business manually anymore, so it's no longer relevant to think of IS as separate," Alexander says.

In addition, insurance executives focus on historical measures of cost savings provided by systems already in place. For example, when $5 billion Mass. Mutual installed a new life and health claims adjudication system, the department was able to to process 10% to 12% more claims with 35% to 40% fewer staff members, Pajak says.

"That's an extremely important measure that goes right to the bottom line because it reduces costs, creates gain and produces capital surplus," he says.

Another argument to justify IS investments is suggesting that market share or revenue would be lost if a new IS initiative is not undertaken.

Take laptops and sales information applications as an example. While they provide more resources for insurance agents, they do not directly result in increased premiums or cost savings from work force replacement, Pajak says. However, he adds, "What happens if you don't make the technology investment, and competitors do?"

Productivity measurements within IS also help insurance executives feel more comfortable about IS investments. To demonstrate productivity gains, Pajak maps the efforts of IS staffers in terms of "work months." Programmer/analysts are expected to maintain more lines of code over fewer and fewer work months.

Based on organization

The way IS performance is measured depends a great deal on how it is organized. For example, Mass. Mutual's IS department is highly centralized, and its measurements are based on overall statistics for the entire organization.

On the other hand, $2 billion Unum distributes the responsibility for the management and cost of its $80 million in IS activities to individual business units. This approach fits in with the company's niche-oriented business strategy, which emphasizes unique product lines.

"Everyone's concerned about cost," Alexander says. "There are a lot of functions we could do across product lines, but we have to spend so much time gaining concurrence from the business units, it ultimately ends up being cheaper to implement them on an individual basis."

At $8.5 billion The Hartford, IS is a hybrid — centralized authority with IS resources divided among the functional business units. IS spending is based on the business units' assessment of their IS needs. Crawford assembles and monitors the overall IS budget of $150 million.

In these cases, as well as at $390 million Protective Life, the business unit managers see IS as part of their individual product cost structures and are therefore concerned that it be controlled. The primary measure is cost reduction, which is equated with efficiency.

For Massengale, this means IS value is measured by how much IS charges individual business unit managers. He engages in continual negotiation with the business unit managers to provide IS services at acceptable costs. Protective Life's annual IS budget is $7 million.

"Our strategic business units know what they can afford to pay for IS services," Massengale says. "IS is one element in their pricing margin, and they have to stay within that margin because of the competition. I need to make sure I'm delivering the best value I can."

Crawford takes a more direct approach, measuring the IS cost per unit of work performed by the users in each business unit. Total operating costs are divided by this ratio to determine the amount by which IS support boosts productivity.

While this approach provides an overall figure for Crawford to hang his hat on, it does not allow IS value to be forecast for specific systems initiatives because it is based on historic costs rather than future benefits.

Mass. Mutual's IS organization addresses the business unit managers' need to know the value of IS services by providing an annual IS business plan and IS Stewardship Report. While the business plan outlines objectives and measures of success that describe how IS activities are aligned with company goals, the Stewardship Report provides detailed statistics on IS services within each business unit function.

The measurements were selected by the business unit executives, who pinpointed what

Continued on page 86

You can't always get what you want

While insurance IS chiefs say they need to quantify the business value of IS, how to do so remains elusive

Jim Massengale
Protective Life Corp.

"I need to make sure I'm delivering the best value I can."

John Alexander
Unum Life Insurance Co.

"Everyone's concerned about cost."

John Pajak
Massachusetts Mutual Life Insurance Co.

"I don't think anybody has a formal process for assessing the business value of IS."

Jack Crawford
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"Now that ... the technology is so inseparable from business change, how do we factor it into the benefit determination?"

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Finding out what others are doing

Insurance executives have few places to turn to for IS comparisons

Insurance executives in search of comparative information about their competitors' IS organizations have few places to turn to. Apart from reading computer industry publications or hiring a consulting firm, they have five main resources:

Information: Life Office Management Association's cost survey and database of insurance company IS investment statistics.
Price: Free to members.
Contact: Ann Purr, manager, management resources, (404) 984-3733 in Atlanta.

Information: Nolan, Norton & Co.'s database of more than 200 data centers. Provides benchmarks and comparisons.
Price: Negotiated individually.
Contact: Mike Connolly, senior partner, (617) 862-8820 in Lexington, Mass.

Information: Compass America, Inc.'s database of mainframe installations. Focuses on data center spending statistics. The service analyzes data center efficiency.
Price: Averages $50,000, based on the size of data centers analyzed.
Contact: John Thomas, vice president, marketing, (703) 709-7600 in Herndon, Va.

Information: Real Decisions Corp.'s database of data center costs and IS service levels.
Price: Averages $30,000.
Contact: Len Bergstom, executive vice president, (203) 656-1500 in Darien, Conn.

Information: Gateway Information Services, Inc., in partnership with Real Decisions. Offers services and software for assessing data center efficiency in insurance companies. Its product, DP Choice, utilizes an expert system to lead users through Real Decisions' database evaluation criteria and to normalize the individual IS organization's data from its competitors. It runs on standard PC hardware.
Price: Although Gateway also offers consulting services, it licenses DP Choice for $10,000 without any consulting service required.
Contact: Mark Klein, senior vice president, (212) 880-9300. Gateway has offices in New York and Indianapolis.

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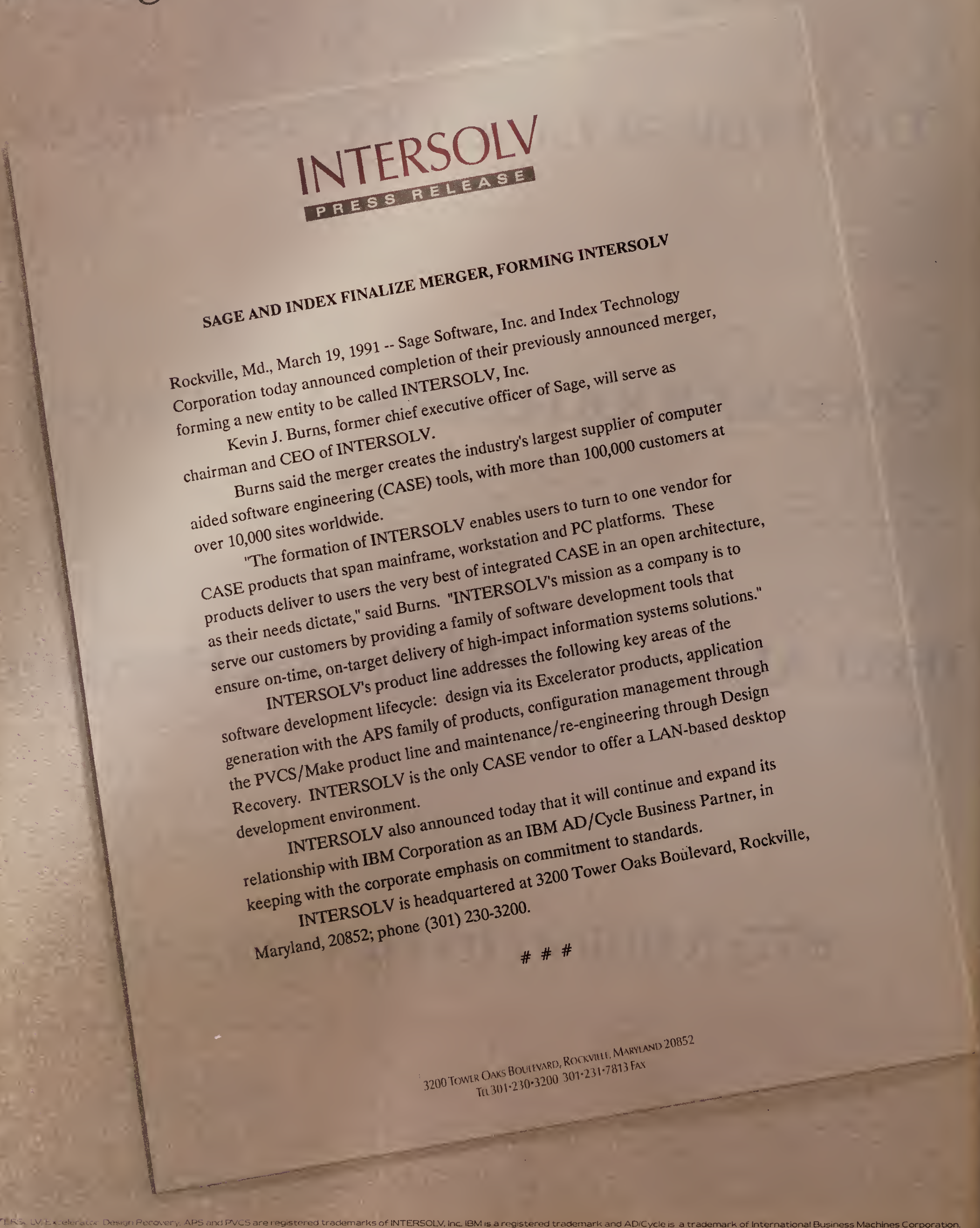

INTERSOLV

PRESS RELEASE

SAGE AND INDEX FINALIZE MERGER, FORMING INTERSOLV

Rockville, Md., March 19, 1991 -- Sage Software, Inc. and Index Technology Corporation today announced completion of their previously announced merger, forming a new entity to be called INTERSOLV, Inc.

Kevin J. Burns, former chief executive officer of Sage, will serve as chairman and CEO of INTERSOLV.

Burns said the merger creates the industry's largest supplier of computer aided software engineering (CASE) tools, with more than 100,000 customers at over 10,000 sites worldwide.

"The formation of INTERSOLV enables users to turn to one vendor for CASE products that span mainframe, workstation and PC platforms. These products deliver to users the very best of integrated CASE in an open architecture, as their needs dictate," said Burns. "INTERSOLV's mission as a company is to serve our customers by providing a family of software development tools that ensure on-time, on-target delivery of high-impact information systems solutions."

INTERSOLV's product line addresses the following key areas of the software development lifecycle: design via its Excelerator products, application generation with the APS family of products, configuration management through the PVCS/Make product line and maintenance/re-engineering through Design Recovery. INTERSOLV is the only CASE vendor to offer a LAN-based desktop development environment.

INTERSOLV also announced today that it will continue and expand its relationship with IBM Corporation as an IBM AD/Cycle Business Partner, in keeping with the corporate emphasis on commitment to standards.

INTERSOLV is headquartered at 3200 Tower Oaks Boulevard, Rockville, Maryland, 20852; phone (301) 230-3200.

# # #

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The merger of Sage Software and Index Technology does far more than just bring together two strong CASE companies. It allows two companies with complementary strengths to focus on a common vision. A vision of where the market must go to fulfill the promise of CASE.

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Other CASE companies may have the right vision, but they use the wrong approach. Simply put, our approach is right because it gives you all the functionality you need, and it doesn't force you to change your culture and projects to fit a rigid model tool set.

It's a fact: Our products are designed to work together, alone, or in concert with other complementary products. What's more, our solutions span the entire development lifecycle. They include Excelerator for design, APS for application generation, PVCS for configuration management, and Design Recovery for maintenance/re-engineering.

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The CASE Company You've Been Waiting For.

Continued from page 82

they wanted to know about IS to assess how effectively their money was being spent. Their suggestions were incorporated into measurements such as year-to-year data on the daily number of processed cases, transaction volume and the number of systems-issued policies.

"We're not a separate profit center because there's no value in that for the company. We see value in running a $65 million organization like a business unit," Pajak says. "We write a business plan because if we were an outside organization competing for the business, we damn well would have to be ready to articulate a plan."

In addition, Pajak has instituted a client advisory board that includes representatives from each of the business units. The board meets monthly to receive IS activity reports, such as quality of applications and network availability statistics. "Our philosophy is that all our books are open. We want them to understand how we measure everything from CPU charges to DASD and print activities," he says.

The value of this exercise is that when a business executive makes a decision to add to IS effort, for example, if he asks for storage of two to three additional years of historical information, he'll understand how much it costs for a pack of direct-access storage devices (DASD) to accomplish his request. "That will make him step back and assess whether

Continued on page 87

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The Redshaw System by Redshaw - The acknowledged leader in high performance insurance automation systems for more than 15 years.

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CASE benefits are a mystery

Proving the business value of internal IS investments such as computer-aided software engineering (CASE) is not any easier than measuring the contribution of IS to the business.

The four insurance IS managers *Computerworld* talked to are investing or looking to invest in CASE for different reasons. None of them are sure about the business benefits it will provide.

Unum is investing about $30,000 per programmer. With a staff of 250, the total cost will be $7.5 million.

Because measurement systems could be implemented to track different aspects of CASE benefits, John Alexander, senior vice president and chief information officer at Unum, offered his board a choice of benefit assessments. "I told the management board they could have a choice in terms of how we think about the benefits of CASE: improved quality, productivity or time. They chose time," he says.

John Pajak, executive vice president at Mass. Mutual, justified his investment in Texas Instruments, Inc.'s IEF CASE tool by citing the changing nature of IS.

"IS permeates the fiber of the insurance business, so you can make a good argument for investment just because you need to move forward with technology," he says.

The Hartford's Jack Crawford, vice president of information management, says he also sees CASE as an evolution. "The benefits are 1) quality, 2) time and 3) less cost. But it's hard to prove because we're not building the same kinds of applications we were [building] before."

The benchmark applications for many CASE projects are written in Cobol and execute a routine set of operations. But new CASE projects such as those at Unum are aimed at complex universal life insurance applications.

Jim Massengale, senior vice president of operations and systems at Protective Life, is in the prototype stage with his CASE projects to sift through the possible benefits before full-fledged implementation.

He has not made an investment decision. "It would be foolish not to capitalize on new technology," he says. However, "we want to add value and find a long-term payoff. If it turns out to be just expensive and fun, we'll postpone it."

MICHAEL L. SULLIVAN-TRAINOR

Continued from page 86

he'll get enough benefit to justify the expense," Pajak says.

While chargeback systems provide a method of measuring and allocating IS costs to the business units, they are often difficult to manage in the face of changing business trends, the executives say.

For example, $500,000 of Unum's data center charges are paid by the individual life insurance business unit. The unit no longer sells policies, but IS must maintain records for 70,000 policyholders.

The unit's business manager has launched a cost-reduction offensive, trimming his staff from 150 to 50. Now he wants to trim his IS costs by moving processing from the data center's mainframe to a personal computer local-area network.

Because Alexander bases his cost measurement on spreading IS processing expenses across the business units, the change in strategy leaves him with a large expense and no place to charge it to.

"It's a good business decision but a tough IS trade-off. A mainframe MIPS costs a thousand times as much as a PC MIPS," Alexander says, "but now I have to find a way to replace $20,000 to $30,000 worth of transactions per month or cut my expenditures."

This kind of balancing is common among all four companies. "We make a basic assumption that the requirements for processors are relatively stable. That ain't necessarily so," Alexander says.

Crucial costs

Unlike spending on new applications, investments in data centers and large networks are viewed as essential activities. Measurement here focuses on efficiency.

"If the network is down for any period of time, it brings the company to its knees," Pajak says, "so one of my accountabilities to the chief executive is network availability. We have a quantifiable measure — zero downtime."

For data center evaluations, the executives compare their efforts with databases of insurance industry IS costs maintained by LOMA and Real Decisions Corp., a Nynex Corp. subsidiary (see story page 82). These firms collect data on IS spending for various categories of data center activities and maintain historical databases of these expenses for the insurance companies that participate in their surveys. Averages for the survey base or a select group of competitors are provided to participants.

"The comparison is helpful and useful to rationalize what we're doing for the boss," Alexander says. "It helps us improve and shape up in certain areas."

The Hartford draws on statistics from LOMA and Real Decisions to develop ratios of IS cost as a percentage of premiums and as a percentage of underwriting expenses. "We track trends with these percentages to see where we stand," Crawford says. •

Gut feelings

In the absence of hard business value measures, insurance IS managers rely on the following softer arguments for justifying new technology investments:

- **New math:** "IS is so integral to the business that business success equals IS effectiveness."
- **Negative sell:** "We'll lose market share or revenue if we don't get this new system. Nearly all our competitors have one."
- **Cost displacement:** "We avoided spending X amount of money because IS has made our processes more efficient. IS has lowered costs, so we get to keep more profit. This system will continue to help us do that."
- **Good old productivity:** "Our productivity gains have been excellent using technology. An upgrade will increase those gains."

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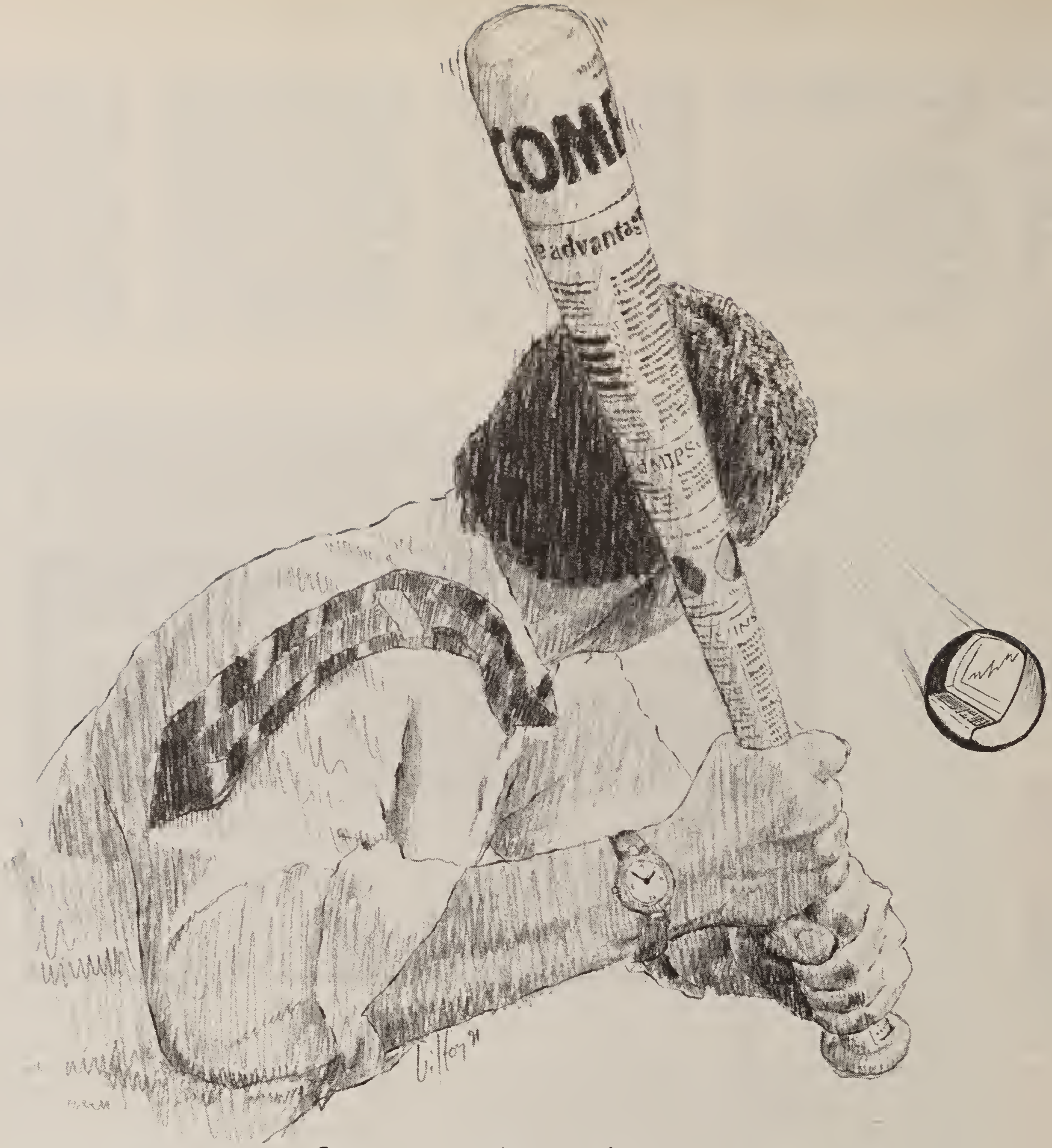

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Bullish at home

▶ **Adapso,** the computer software and services association, released a survey last week showing that 80% of software companies polled expect higher revenue and profits this year. But 58% said economic conditions are affecting them "somewhat negatively," and 42% said customers are taking longer to pay. Only 16% said they will try to cut costs this year. Of those, 41% will cut staff, 37% will trim advertising and marketing expenses, and 4% plan to sell off operations.

Ross on the rise

▶ The first quarterly report issued by **Ross Systems, Inc.** in its newly public capacity featured the same kind of bottom lines that led the firm to voluntarily report earnings in its last quarters as a privately held firm. The Redwood City, Calif.-based exclusive purveyor of business and financial software to the Digital Equipment Corp. market posted revenue up 54% to $12.6 million for the quarter ended March 31. Quarterly profit of $330,000 contrasted with a $1.5 million third-quarter loss last year.

Lapping it up

▶ **Selecterm, Inc.**, a computer products rental and maintenance firm based in Danvers, Mass., early this month acquired the assets of **Lapstop Corp.**, a start-up in the upstart field of short-term laptop rentals in the travel arena. The deal, according to spokesmen from the respective firms, will give Lapstop a shot of financial and corporate backing needed to expand and will speed Selecterm into the business of renting fax machines and laptops to traveling businessfolks at airports.

General acclaim

▶ The computer industry has pitched the ultimate curve ball to Wall Street, it would seem: "**Data General [Corp.]** has reported two excellent quarters in a row," a recent Salomon Brothers, Inc. report said, "and analysts don't know what to do." At least one group of analysts came up with an answer: conceding that its move might initially incur "incredulity and skepticism," Salomon said the one word analysts are out of practice mouthing with regard to DG is "buy."

Northgate financials fool the naysayers

BY MICHAEL FITZGERALD
CW STAFF

EDEN PRAIRIE, Minn. — Northgate Computer Systems, Inc.'s choice of April 1 as the release date for its 1990 financial results only underscored the irony: Could we believe the positive postscript to a loss-wracked report, or should we wait for the almost inevitable cry of April Fool?

It was, after all, as recently as November [CW, Dec. 3, 1990] that Northgate posted a third-quarter loss and warned that it was likely to lose money in the fourth quarter, reported that it was no longer meeting the agreements of its bank loans and replaced its chief executive officer. At the time, rumors circulated that Northgate, a mail-order systems vendor heavily reliant on advertising, was not paying its bills to trade magazines and could be in danger of being cut off.

One analyst went so far as to look at the former highflier's catalog of misfortunes and curtly concluded: "I think it's a company you and I will not remember in two years." So, barely four months later, it was natural to raise an eyebrow when new CEO Gary Held said, "Northgate in the last 120 days has been a Harvard Business School [type of] case study on how to turn a company around. We have had an absolutely phenomenal and complete turnaround."

The figures issued on April 1 offered some support for Held's optimistic statements. According to the report, Northgate posted a $6.9 million loss on revenue of $203 million for fiscal 1990, compared with a $2.4 million profit on $112 million in sales in 1989. The firm attributed the loss largely to a onetime, $7 million restructuring fee.

However, good news came along with the bad: Held said Northgate had posted profitable numbers for December and continued in the black during January and February, heading for what he predicted would be "a solid first-quarter profit." Last month, Northgate reported a $2.24 million profit on revenue of $46.94 million for the first quarter of fiscal 1991, which closed on March 31.

Which way Northgate?

Northgate Computer Systems, Inc., which once seemed headed south, could be on the rise again with a new leader and a tightened focus

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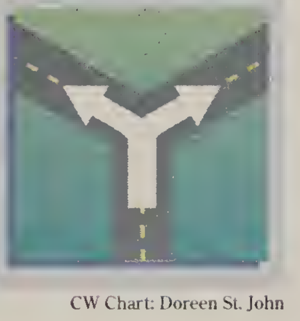
1987:	$9.38M	$59,000
1988:	$31.80M	$(616,000)
1989:	$111.56M	$2.39M
1990:	$203.37M	$(6.92M)
1991(Q1):	$46.94M	$2.24M



Source: Northgate Computer Systems

CW Chart: Doreen St. John

Some saw turnaround

A turnaround of this sort was not a completely unforeseeable event, some analysts said. Even at the time of Northgate's public disclosure of its problems, some analysts said they thought the company would pull through.

"Can they come out of it? Sure — take a look at AST a few years ago," said Seymour Merrin, president of Palo Alto, Calif.-based Merrin Information Services. He referred to earlier financial reverses at Irvine, Calif.-based AST Research, Inc. "Everybody had crossed them off the list," Merrin noted, "but now they're very strong."

Earlier this year, another analyst talked about how Northgate could overcome its troubles.

"Things aren't looking real great right now, but it's certainly not beyond salvaging," said Eric Zimits, an analyst at Rauscher Pierce Refsnes, a regional brokerage firm headquartered in Dallas. "If management takes the necessary steps and pulls in the reins, I don't think it's destined for bankruptcy."

Zimits said he believed Northgate's problems stemmed from overspending on marketing and a disastrous foray into establishing a corporate sales force.

"I think it's a matter of the company going back to what they know best, and that's direct-mail, low-cost, quality computers direct to customers," he said.

Held seems to have been listening. Where his predecessor, Lawrence Greenberg, was valued for his financial acumen, Northgate's board — on which Greenberg still sits — tapped Held for his operating experience. His reign as president and CEO has seen the company slash 22% of its work force and focus on its core mail-order business.

In addition, Northgate has rolled out new products. In March, the company introduced several new desktop machines. It also began shipping its first notebook, based on Intel Corp.'s 80386SX chip, in the first week of April.

The firm is also counting on its recent switch in service contractors to further buff an already glowing reputation for fine service, Northgate Chairman Arthur Lazere said. He praised former Northgate service contractor Bell Atlantic Corp. but said new choice NCR Corp.'s ability to provide same-day service throughout the U.S. should help win corporate accounts.

No stranger to struggle

Held, who has been with Northgate for two years and is Lazere's son-in-law, is no stranger to struggling companies. He took over the Connecting Point retail chain the day it declared bankruptcy and turned that around in a year and a half.

"Those situations don't bother me — that's when I do my best work," Held said.

Held said Northgate's business plan in the future would continue its three-point push: Focus on quality improvement, beef up service, and improve internal procedures, including system development.

Once-mighty Maxtor fumbles '91 earnings

BY RICHARD PASTORE
CW STAFF

Maxtor Corp., once the leading vendor of high-end 5¼-in. Winchester disk drives, has dropped the ball and suffered a penalty shot to its earnings with a $49.8 million loss for the latest quarter and a $45.4 million loss for fiscal year 1991, ended March 31.

Maxtor's problems began under the stewardship of recently deposed Chief Executive Officer George Scalise, analysts said. Engineers who were unhappy with management left the San Jose, Calif.-based firm. Consequently, Maxtor fell behind on development of 5¼-in. and 3½-in. drives with capacities over 1G byte, several analysts said.

"That leadership advantage not only eroded, it vanished," said James A. Stone, an analyst at Ladenburg, Thalmann & Co. in New York. Maxtor has few OEM deals for its latest generation of high-end drives, he said.

Maxtor competitors Seagate Technology, Inc. and Micropolis Corp. have picked up the slack and taken over the lead, netting significant OEM deals for their high-end drives, said James Porter, president of Disk/Trend, Inc. in Los Altos, Calif.

Just 13 months ago Maxtor was looking much more formidable, when it virtually doubled its size with the acquisition of the former Miniscribe Corp. and leapt from fourth place into the No. 2 position among 5¼-in. and 3½-in. drive manufacturers, behind only Seagate.

Maxtor paid $46 million to buy Miniscribe — which posted $70 million in 1989 sales — in a court-ordered auction. A new management team has stabilized the Miniscribe operation, Porter said.

In January, Scalise was replaced by former chairman and company founder James McCoy. The new CEO's primary objective is to "rebuild the engineering ability to get new products out earlier," Porter said.

Others said they expect that Maxtor will not have a chance to regain a leadership role in the next generation of high-end drives before 1992. The window of market opportunity for drives greater than 1G byte is already closing, Stone pointed out, while the window for the next generation has barely opened.

The firm reported the losses on $223.6 million in sales for the quarter and $871.3 million for the fiscal year. Roughly 59% of the loss came from onetime restructuring and other charges, including consolidation and layoff costs. The company ended fiscal 1990 with $491 million in sales and $18.9 million profit.

The cost crunch.

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British Rail spins off telecommunications unit

Operator aims to position itself alongside British Telecom as major public telecom carrier

BY BRYAN CRUMP
IDG NEWS SERVICE

LONDON — What does telecommunications have to do with trains? What gives British Rail Telecom, part of a company that operates a rail network with its origins in the last century, license to sell communications technology for the next?

Peter Borer, managing director at BR Telecom, answered both questions by pointing to BR Telecom's long history as a telecommunications operator, during its tenure as a part of British Rail. Good communications are vital to a railway, Borer said. If stations cannot talk to each other, or if the lines to the signals are broken, then trains cannot run.

Officially formed as a separate company last September, BR Telecom runs about 60,000 internal lines for British Rail's business operation. The railroad's signaling staff still has its own network.

Borer's mission is simple: to establish the firm alongside British Telecom and to rival Mercury Communications as one of the three major public telecommunications carriers in the UK. With the March release of the government white paper on telecommunications competition for the 1990s giving the green light for the scrapping of the telecom "duopoly" that prevented companies other than British Telecom and Mercury from offering a public fixed-line service, Borer's team is ready to swing out onto the marketing mainline — once he has found another business partner.

Borer is looking for a solid, privately owned telecommunications carrier with plenty of money and marketing expertise to share with his fledgling company. "They've got to be pretty substantial companies," he said. "We're talking about hundreds of millions of dollars."

However, it is the marketing as much as the money that BR Telecom wants. Until now, the firm has had only one customer: British Rail. Selling telecom services to the rest of the UK will not be so easy, Borer conceded. While he has no doubts about his firm's ability to come up with the telecommunications goods, he said he thinks BR Telecom will need help in tailoring them to the marketplace.

Aside from being BR Telecom's sole customer, British Rail could be the fledgling firm's biggest liability: British Rail always seems to be struggling against bad press. Borer acknowledged that it is a big problem, but he said he believes the right advertising will help BR Telecom bypass the issue. "Some people are always going to knock us, but good branding can change the customer perception of what you are trying to sell. Intercity [Rail] has managed to do that, and they are 100% [British Rail]," he said.

Borer is no stranger to the realities of the marketplace. He has spent most of his working life in the service of telecommunications companies: first at IT&T in Brussels, Paris and the U.S., and since 1984 at Kingston Communications, a UK telecommunications company.

Firsthand knowledge

Borer's stint at Kingston gave him an opportunity to experience what it is like to compete against British Telecom firsthand. His conclusion: Sometimes it is better to be smaller. Kingston's small size meant it was relatively easy to become a 100% digital network, a task it completed shortly after Borer joined British Rail.

His point is that small firms are often better placed to take advantage of market changes. Changes such as the rise in the use of computers has led to greater demand for data as well as voice lines. Borer said he expects telephone demand to stay constant throughout the '90s.

"Growth seems to be insatiable, even within British Rail. British Telecom's weakness is that it has difficulty in moving quickly in an entrepreneurial way to take advantage of this," Borer said.

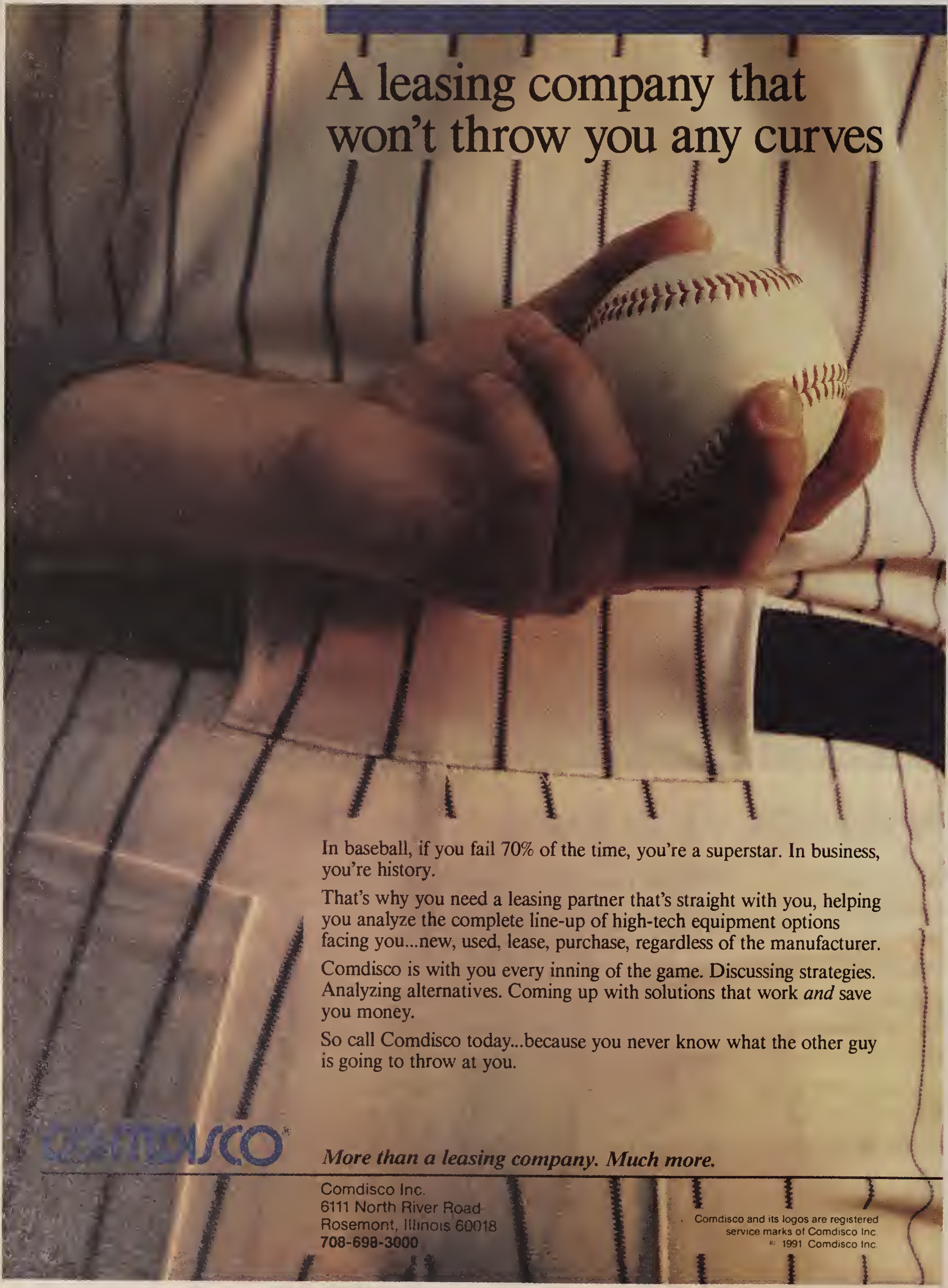
But isn't Mercury small, too? Borer agreed but said Mercury serves limited areas of the UK. BR Telecom's cables go everywhere the railway goes.

When it comes to those cables, Borer has no worries about his firm's expertise. About 70% of its lines are digital, and the network has 1,500 miles of fiber-optic cable. In two years, he said, the network should be 100% digital and fiber.

If it succeeds, BR Telecom will not be the first telecommunications firm to spin off from a railway. Borer cited the case of Japan Telephone Co., No. 3 in its national market, as a case of a telecom supplier formed from the telephone network of the country's national rail network. Railways in Canada, the U.S. and New Zealand have also attempted to sell spare capacity on their telephone systems.

Borer said the business is there. If BR Telecom can get on the same bandwagon, Borer may find he has booked a permanent seat on the gravy train.

Crump writes for PC Business World, *an IDG Communications British publication.*



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Privacy issues cloud software future

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C.— A report just issued by the National Research Council points up a burgeoning problem for the software industry: Not only is the law unclear on the critical issue of intellectual property protection as applied to software, but leading lights in the field are at loggerheads over what direction legal development should take.

Meanwhile, as confusion proliferates, a double-edge irony is mounting: The law's inability to keep pace with software technology is starting to impede that technology, while failing to protect the rights of its developers.

Results of a December 1989 workshop, which brought together 100 computer specialists, entrepreneurs, legal scholars and lawyers are laid out in the report published by the council, an arm of the National Academy of Sciences. The report has been updated to reflect recent developments in technology and case law.

According to the report, "Some see [industry's future] obstructed by uncertainty over intellectual property protection for software and by the adversarial behavior that has arisen in this climate of uncertainty. "The result," said Robert Spinrad, director of corporate technology at Xerox Corp., "is confusion, which is having a 'stultifying, dulling effect' and is 'slowing down the activity' of firms big and small."

A unique situation

Workshop attendees said that none of the three ways by which software may be protected — copyright, patent and trade-secret laws — really offers a good fit for the uniqueness of software. As a result, gaps in protection are hard to avoid, while some areas of coverage are too stringent. Proposals ranged from "do nothing" to hybrid patent-copyright approaches to the development of a new body of law specific to software.

Copyrights cover the expression of ideas, not the ideas themselves. That often works well in the software world where independent developers may implement the same functions in a different way, as in competing word processing systems. But viewing software as analogous to literary works, as courts generally do, ignores its status as technological processes, the purview of patent law.

To augment intellectual property protections, the U.S. Patent and Trademark Office has begun granting patents for software and for software-dominant products. Some applauded the accelerating practice, saying it properly recognizes software as technology while offering powerful incentives for innovation.

However, some attending the workshop saw the practice as "a little black cloud on the horizon," saying it will inhibit independent invention and lead to skyrocketing litigation.

Others said the slowness of the patent process would impede product deployment, and one observer said it could put a "stranglehold" on scarce supplies of efficient algorithms for some processes.

The report also looks at proprietary interest in interface code, particularly at the hotly contested issue of what can and cannot be protected in the "look and feel" of the user interface. It "is one of the nastiest and most difficult areas" the software industry has to grapple with, said Frank Ingari, a former Lotus Development Corp. executive. Last summer, Lotus won a major "look and feel" suit involving its 1-2-3 spreadsheet interface. It is currently in court on another.

In a controversial proposal, Harry C. Reinstein, chairman at Aion Corp., said all interfaces should be considered "open," allowing independent implementation of publicly available specifications but not copying of code. "Let us just not protect interfaces . . . interfaces are legitimate points of competitive entry," he said.

Five Cs

The following are suggested goals for a software protection system:

- **Coverage.** Protection should extend to the brilliant ideas and the hard work — the inspiration and the perspiration — that goes into a product.
- **Continuity.** The ability to build on existing standards and conventions at a reasonable cost should be assured.
- **Consistency.** This is key in the application and scope of intellectual property protection. Surprises from belated declarations of property rights are to be avoided.
- **Cognizance.** The timely awareness of competing property rights claims should be facilitated so that developers will not be blindsided by competitors.
- **Convenience.** A straightforward intellectual property system that minimizes litigation and conflict should be the ultimate goal.

Source: Robert Spinrad, Xerox Corp., as reported by the National Research Council

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Network Systems acquires vital link

BY ELISABETH HORWITT
CW STAFF

Just as AT&T was finally dropping its net over NCR Corp. last week, Network Systems Corp. was finalizing an agreement to acquire local-area network interconnectivity vendor Vitalink Communications Corp. for approximately $45 million.

Unlike the AT&T/NCR rapprochement, however, the Vitalink acquisition was friendly on both sides, according to company spokesmen.

Minneapolis-based Network Systems has historically specialized in high-speed, channel-based networks between IBM mainframes and supercomputers.

During the past several months, the firm has plunged into the LAN interconnectivity business through a reseller agreement with Wellfleet Communications, Inc. and a slew of announcements.

The sticking point for Network Systems is that "they have no present in terms of installed base, distribution channels or reputation," Vitalink spokesman Dana Henrickson said.

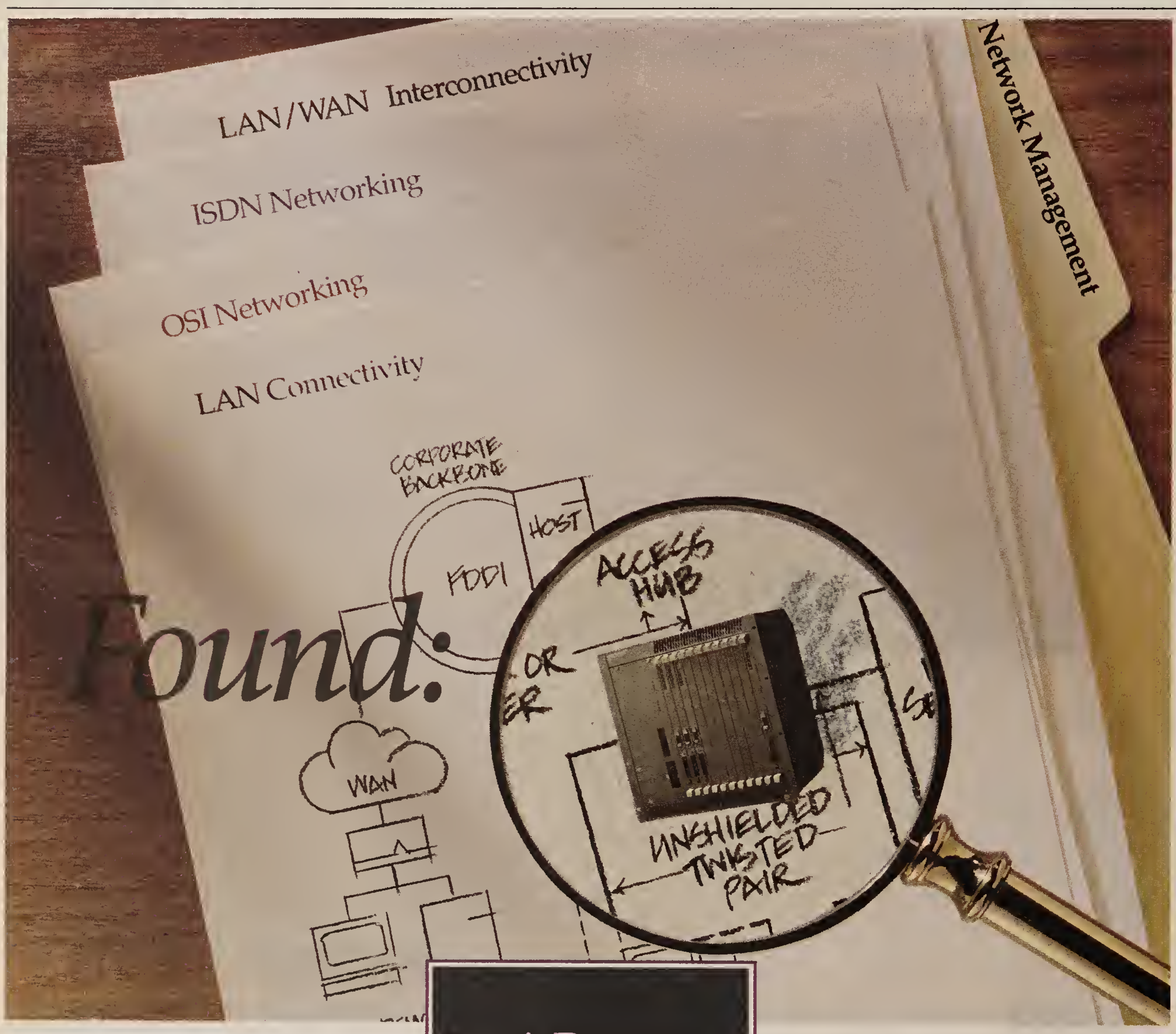
Vitalink can fill this gap, he added.

Vitalink, for its own part, has been losing out recently to aggressive router vendors such as Cisco Systems, Inc. and Wellfleet. "It would take our internal program two to three years to come up with a full range of [LAN interconnectivity] products . . . and the market won't wait," Henrickson said.

"Vitalink was really hot when people thought remote bridging was viable, but time has shown that bridges are not the answer for large networks," said Janet Hyland, an analyst at Cambridge, Mass.-based Forrester Research, Inc.

Integration of the LAN interconnectivity side of the house is still down the road, Network Systems spokesman David Flanagan said.

Vitalink will continue to operate under its own name as an autonomous business unit responsible for all of Network Systems' LAN interconnectivity products, according to Flanagan.



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COURT REPORT

Atlanta-based **Hayes Microcomputer Products, Inc.** was recently awarded additional damages in its patent infringement lawsuit against **Everex Systems, Inc., Ven-Tel, Inc.** and **Omnitel, Inc.** Federal Judge Samuel A. Conti doubled the damages awarded by a jury in San Francisco four months ago as a result of its finding that the defendants had willfully infringed on a Hayes modem patent. Conti also granted Hayes' request to recoup litigation expenses and added, "The court hopes that its holding will deter future would-be infringers from plunging into complex, expensive litigation . . ."

Meanwhile, **Signature Systems, Inc.** is asking a U.S. District Court to resolve the copyright dispute that has been brewing for the past five years between Sebastopl, Calilf.-based Signature and Hayward, Calif.-based **Qantel Business Systems.** Back in 1985, Signature began to market Comet, a software package that allows software written in Qantel's Qibasic to run on personal computers other than Qantel's. Qantel threatened suit in 1985. Subsequently, the two companies engaged in negotiations for the sale of Comet to Qantel; the sale, however, went the way of the suit. Last month, with Qantel once again hinting at litigation, Signature beat them to the bench. The firm's suit asks for a declaratory judgment that Comet does not infringe on any Quantel copyrights.

One of the computer industry's more ballyhooed legal affairs — the lawsuit fired off by **IBM** leasing and financing subsidiary **IBM Credit Corp. (ICC)** against leading independent lessor **Comdisco, Inc.** on the grounds that certain Comdisco upgrades and reconfigurations of IBM computers in the hands of ICC lessees amounted to theft of ICC's property — got its day in court late last month. The result is another wait. The Delaware Chancery Court heard arguments for and against Comdisco's motion to dismiss ICC's complaint and has the matter under consideration. A ruling is expected any day.

Intergraph moves tentatively to open systems

Despite cross-system compatibility, the firm will license its software only for its own platform

BY J. A. SAVAGE
CW STAFF

HUNTSVILLE, Ala. — Intergraph Corp., the first company to market a reduced instruction set computing (RISC) workstation, claims it is moving into open systems. If management has its way, however, the company will not be dragged into mix-and-match computing.

During the past year, Intergraph has moved to interconnect its engineering workstations and other systems. It also acquired Dazix, an electronic design firm that offers software on Sun Microsystems, Inc.'s workstations. Despite these moves into heterogeneous computing, Intergraph plans on "licensing its software only for our own platform," said Robert Glasier, vice president of marketing.

In the near future, Intergraph will adopt the Open Software Foundation's OSF/1, abandoning AT&T's System V.3. Although that would mean the company's software should be able to run on any other hardware that conforms to the OSF/1 standard — IBM's or Hewlett-Packard Co.'s, for instance — Intergraph would rather it did not. "I can't say we'd leap at the opportunity to license our software to run on HP," Glasier said.

Dave Burdick, vice president of Dataquest, Inc.'s systems group, said the strategy of not-quite-open open systems will not hurt the company in the short run. "Intergraph is a follower rather than a leader," Burdick said. "It doesn't need to waste a lot of time trying to be a leader in open systems."

Glasier: *'It's necessary to be able to support standards'*

The firm has chosen to ignore the larger commercial market that RISC vendors including HP, IBM and Sun are pursuing. According to Glasier, the company assembled a commercial sales force three years ago, but it was refocused on technical sales.

Intergraph is doing fairly well in its niche. Its revenue crested at $1 billion in 1990, up from $860 million in 1989; annual profits slipped from $79.5 million in 1989 to $62.6 million, driven down by the costs of the Dazix acquisition, Intergraph said.

In fact, Burdick said, in coupling a workstation business mode with systems application software, Intergraph has carved out "a unique existence in the workstation market."

But its foray into open systems remains limited to networking. "To be competitive, to tie our systems to an MIS department, it's necessary to be able to support standards," Glasier said. Last month, the company announced products that communicate and share data with Digital Equipment Corp., HP, IBM and Sun computers as well as Open System Interconnect, Token Ring and X.25 interface standards.

INTERNATIONAL

BRIEFS

Open up in the name of Microsoft

▶ Acting on a complaint filed jointly by **Microsoft Corp.** and **Autodesk, Inc.**, Brazilian officers of justice raided the Sao Paulo offices of **Westinghouse Brazil** late last month and discovered a cache of unauthorized copies of MS-DOS and Autodesk's Autocad software, Microsoft said last week. If Westinghouse and the software vendors fail to reach an accord by May 27, Microsoft said, Westinghouse could face a civil suit as well as copyright infringement fines in the ballpark of $2 million.

Bull regroups in Asia

▶ **Groupe Bull** said it has reorganized its Asian operations to better serve Pacific Rim customers. Previously, **Bull SA of Europe** and **Bull HN Information Systems, Inc.**, based in the U.S., maintained sales and marketing operations in that region. The reorganization consolidates all Asian sales and marketing under Bull HN. Bull has segmented the area into four operations, all of which will report to John Noonan, vice president and general manager of Asia Operations, at Bull HN headquarters in Billerica, Mass.

Turn for the worse

▶ Hopes that economic fluctuations would leave **Finland**'s technology sector relatively unscathed evaporated as the Finnish technology industry's bankruptcy rate soared 90% over last year's, a recent report in the Finnish business press said. From January to March, said Mikko Parjanne, executive officer of Finnish market research firm **Asiakastieto Oy**, 1,524 creditors' petitions were filed against technology firms, driving many smaller firms into bankruptcy.

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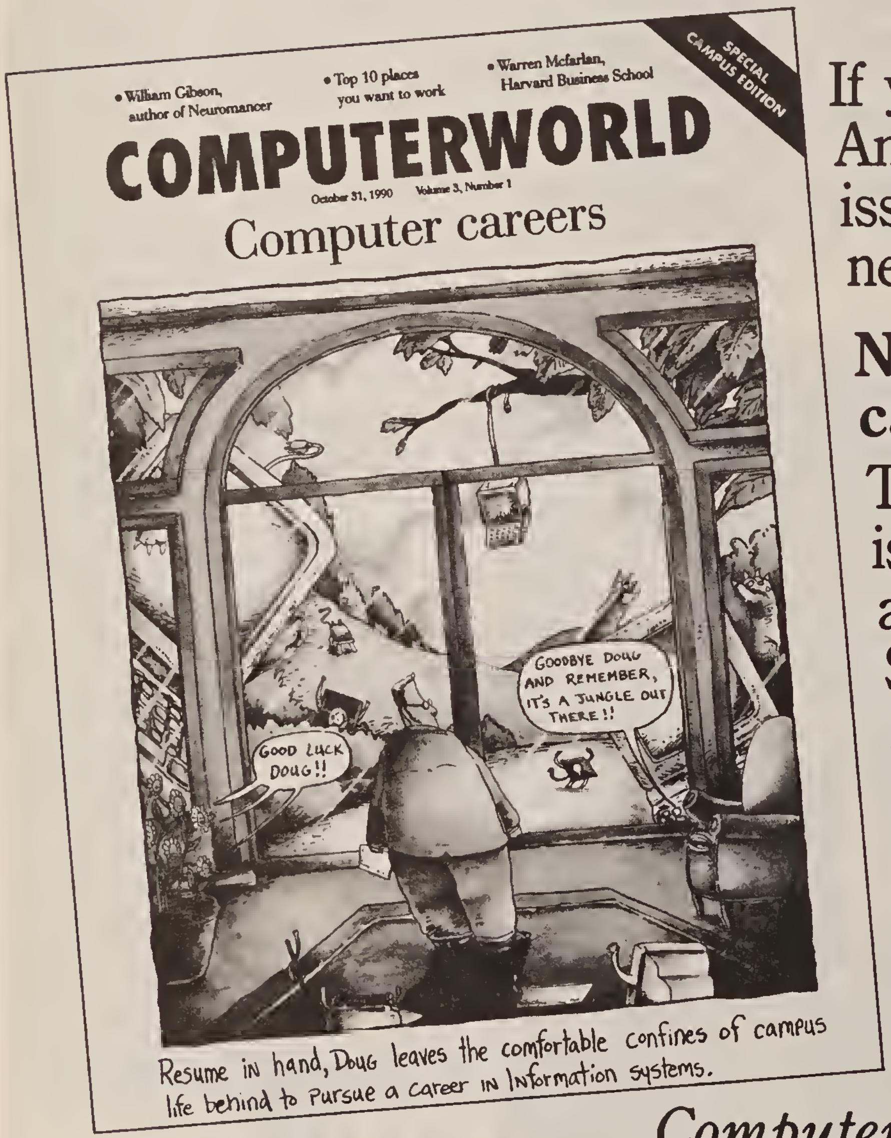

• William Gibson, author of Neuromancer
• Top 10 places you want to work
• Warren Mcfarlan, Harvard Business School

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Planned Editorial Features:

(subject to revision)

- Companies where computer career students want to work. And their top choices for: Information Systems, Engineering, Sales & Marketing, Technical Support, Research & Development.
- Prospects for minorities in computing.
- Merits of an Electrical Engineering degree for a computer career.
- Information Systems salaries from Computerworld's annual survey with the Data Processing Management Association.

Shining spots on the retail horizon

BY BARBARA FRANCETT
SPECIAL TO CW

It may come as no surprise that opportunities for information systems professionals aren't exactly sizzling in the struggling retail industry. Fortunately, there are some bright spots, namely suppliers, prescription drug companies and mail-order firms.

For example, Walgreen Co., a drugstore chain in Deerfield, Ill., reports a growth of more than 100 stores per year from a base of 1,500-plus stores, according to Pam Schmitz, a technical recruiter for the company. "We're in a recession-resistant business. People don't stop buying prescription drugs," she says.

As the number of Walgreen stores increases, existing stores are being outfitted with in-store processors — an IBM Application System/400 in each store — as well as point-of-sale and scanning equipment, Schmitz says.

Walgreen is also implementing a system to manage inventory, and it subsequently needs people to develop and maintain them, according to Schmitz.

Overall, the company is looking for professionals experienced with IBM midrange and mainframe computers. "We have all that point-of-sale data, so we want to use the information to do a better job of purchasing at the right price and the right time of year."

The company has increased its IS hiring by approximately 7% since last year, Schmitz says. Most of the new hires are programmer analysts with two to five years of experience. Not much is happening at the project leader or management level, she says, because Walgreen generally hires at the lower end and promotes from within.

Job hunters with a hankering for retail might also find pockets of opportunity at mail-order and direct-sales companies. Both of these segments are computer-intensive businesses and are reportedly growing.

"Basically, we're strong and moving ahead. We haven't been touched by setbacks," says Raymond Perry, vice president and chief information officer at Avon Products, Inc. in Rye, N.Y.

"IS is an exciting place to work because our business strategies have an IS component," Perry says. The most recent of these is a new direct-mail program Avon plans to launch nationally during the next year.

IS professionals skilled in telecommunications, database and applications programming and design are in the heaviest demand, according to Perry.

Hiring opportunities are also flourishing at retailers' suppliers, a related employment avenue. Retailers are starting to demand that their suppliers invest more in technology, says Dean Trilling, vice president of IS at American Greetings Corp. in Cleveland. The greeting card and gift wrap company supplies retail stores and maintains a small retail division of its own.

"We're spending money on developing technology like EDI that helps us build better relationships with retailers," Trilling says.

However, the majority of retailers are riding out a difficult economic storm, making IS employment opportunities slim. Although they have started to invest in information technologies such as inventory control systems and electronic data interchange (EDI), retailers are currently refocusing and consolidating the responsibilities of their existing staffs.

For example, retail managers are asking their systems analysts to perform coding and their technicians to demonstrate administrative skills.

"Many retailers want state-of-the-art systems, but they don't want to buy the expertise to run them," says Allan Grossman, senior partner at A. Davis Grant & Co., an Iselin, N.J.-based recruiter. "In the last year, we haven't seen any pickup at the management level in the retail sector."

But if retailers want to compete successfully, they need an up-to-date and technically proficient IS department, says Murray Forseter, editor and associate publisher of *Chain Store Age Executive* magazine in New York.

While the overall retail career picture is gloomy now, it may nevertheless improve in the near future, analysts say. "In the long run, the emphasis on technology will translate into more jobs," says Burton M. Nudelman, a management consultant specializing in the retail industry in Portland, Ore.

> "MANY RETAILERS want state-of-the-art systems, but they don't want to buy the expertise to run them."
>
> ALLAN GROSSMAN
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The summer should bring a more positive outlook. "We've turned the corner of the retail recession," says Herb Kleinberger, a partner responsible for retail systems consulting at Price Waterhouse's Management Horizons Division in New York.

"I wouldn't call it boom time, but there will be opportunities."

Francett is a free-lance writer based in Bloomfield, N.J.

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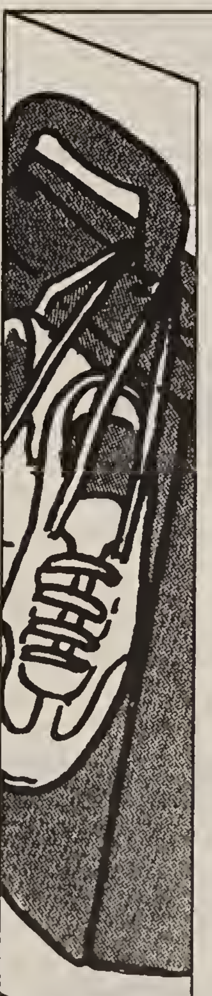

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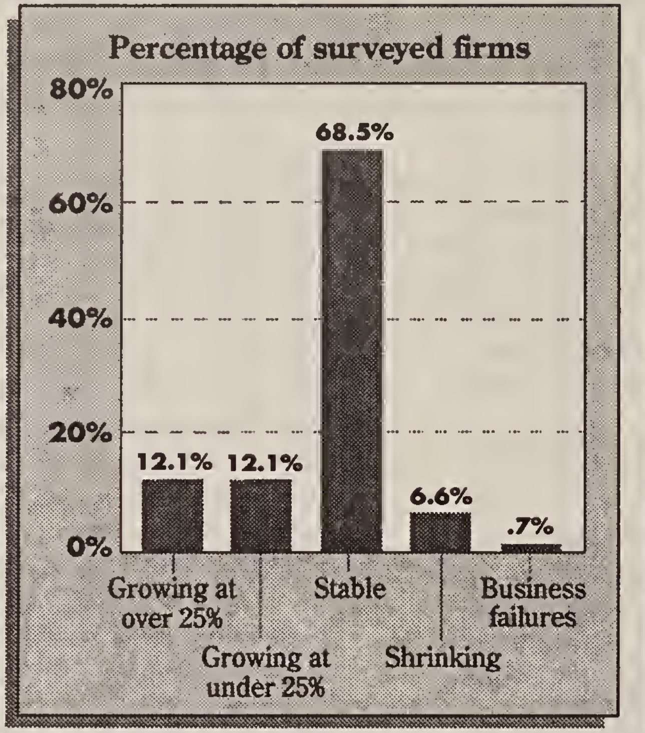

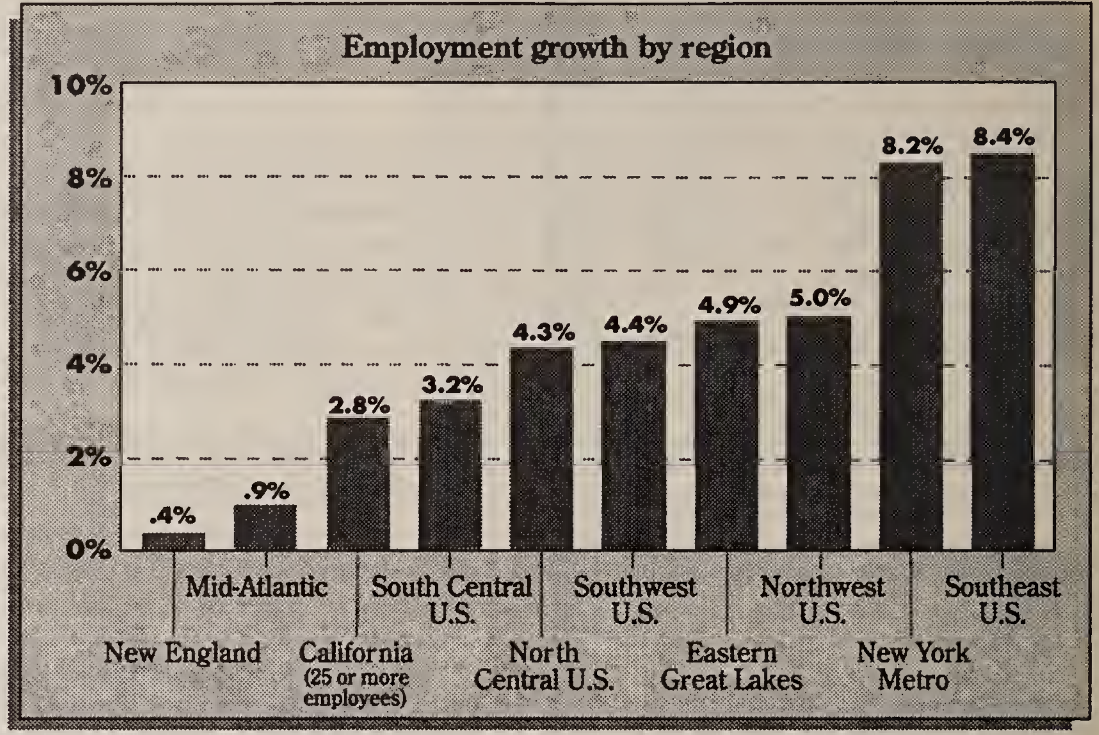

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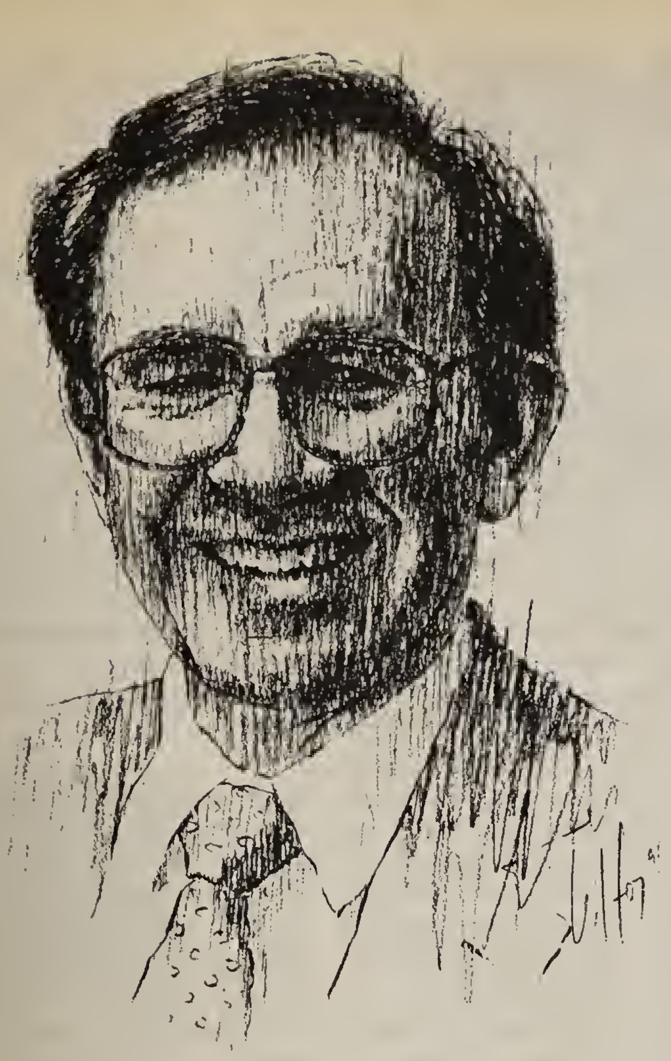

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Singing those used-computer blues

BY ALAN RADDING
SPECIAL TO CW

Anybody want an old Unisys Corp. B-series computer cheap?

Bob Connors, a vice president at Peoples Bank & Trust in Indianapolis, is beating the bushes for anyone who might take the machine off his hands. He gave up hopes of getting any significant amount of money for the machine. Now he just wants to cut his losses.

Despite a large and active market in used minicomputers, users trying to dispose of an older minicomputer or midrange machine may be surprised by the degree of effort involved and disappointed in the prices they receive. Disposing of a used minicomputer today takes work, patience and organization.

With a leased computer, disposal is easy. When the lease expires, the user simply returns it to the leasing company, unless he wants to extend the lease or buy the machine.

Alternatives to leasing

Otherwise, there are four ways to get rid of a used minicomputer: 1) Pass it along to another part of the organization, 2) Trade it toward the purchase of the next computer, 3) Find an end-user buyer or 4) Sell it to a used-computer dealer.

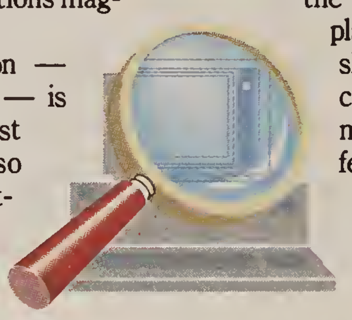
The first option is the easiest, if other parts of the organization will accept the machine. For instance, Lou Riley, MIS manager at Advanced Environmental Technology Corp., a hazardous waste management company, easily passed small, used IBM System/36 machines along to newly opened branch offices. The company relies exclusively on used System/36s although it intends to convert to the Application System/400.

The second option is also uncomplicated, provided the seller trades in a machine the vendor carries. For instance, Bruce Bills, library systems administrator at Ricks College in Rexburg, Idaho, bought a new computer directly from IBM but wasn't able to trade in a non-IBM machine for it.

For many managers, the trade-in option is attractive because a seller can kill two birds with one stone: He can get the old system off his hands and get a discount on a new system at the same time.

Users seeking an end-user buyer for the old computer — option three — often find themselves looking for the proverbial needle in a haystack unless they are disposing of a current, popular machine. "We really have to find a unique buyer," says Connors, whose efforts to dump his old Unisys B-series machine have so far been in vain. The most likely buyer is a bank that has a similar machine and wants to acquire another for redundancy. To find such a buyer, the bank is putting a classified ad in various banking operations magazines.

The last option — selling to dealers — is among the most popular, but it is also the most complicated.



When Tactech, Inc. in Yorba Linda, Calif., downsized from a Digital Equipment Corp. VAX 8250 to a network of Sun Microsystems, Inc. Sparcstations for the company's major on-line transaction processing application, Information Systems Director David Troutt spent two weeks locating potential dealers and buyers and sending them faxes on specifics of the machine. By thumbing through ads in the back of computer magazines, he identified about 12 used-computer dealers, four of which showed interest.

That was the easy part.

Then the horse trading began. Troutt had difficulty pinning down the price. "The buyers were very cagey when it came to price. They wanted to know who I had talked to, what kind of prices I was getting — they were trying to see how knowledgeable I was," he says.

To bring himself up to speed, Troutt studied the prices of the used equipment for sale in the magazine ads. "I expected to receive about 25% less than what they would turn around and sell the stuff for," he explains, "but it pays to shop around." He received offers for his memory cards that differed by $2,000.

Whatever avenue a seller chooses to take, there is more to selling used computers than just unloading them or jockeying for the best price. The machines have to be in certifiably excellent condition. The seller must show that the machine has been under a maintenance contract and, in some cases, have a vendor acceptance certificate. If a software license transfer is involved, all of the documentation of license ownership must be in order.

"DEC came out to de-install the 8250, and the buyer wanted the [Labor Activity Reporting System] report," Troutt recalls. The report accompanies an official letter from DEC certifying that the machine has been maintained to DEC's standards.

With the documentation in order, users can dispose of computers in the used market, but they shouldn't expect to get rich. Except for popular machines that are still in production, used computers receive only a small fraction of their original value — 10 to 14 cents on the dollar in many cases.

Depreciation factors

Connors says he hoped to recover the value of the machine remaining on the bank's books, but that doesn't appear likely. In a moment of wishful thinking, he adds: "It would be nice, at least, if we could depreciate it faster," so it wouldn't look so bad on the books.

How much a used minicomputer brings in depends on the make and model. Machines currently in production, such as the AS/400, bring top dollar. However, the popular System/36, especially the larger models, still brings a good price because of the large, active market for it.

Prices fall off steeply for equipment that is out of production and for which the market has dwindled. The System/38, dealers report, has very little value. In the end, some machines are worth only what they provide in the way of a few spare parts.

Radding is a free-lance writer in Newton, Mass.

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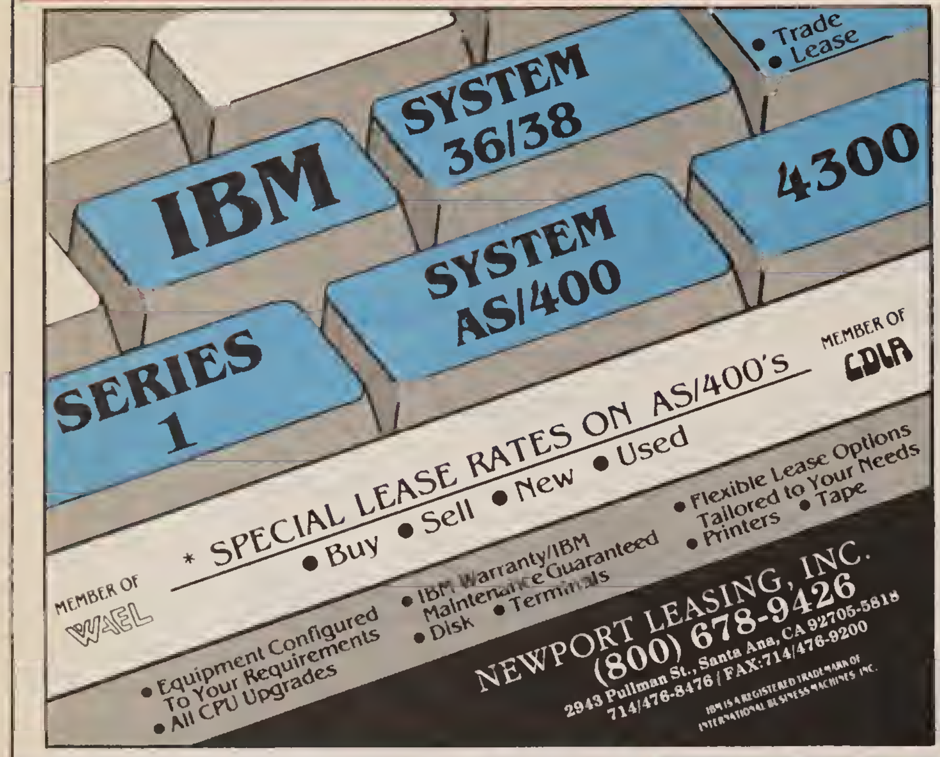

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Steelcase creates sleek, effective training

BY GLENN RIFKIN
SPECIAL TO CW

Steelcase, Inc., the world's largest manufacturer of office furniture, had a problem. Each year, the company would spend more than $100,000 on outside personal computer training for its employees, and each year, the information systems department would feel more than a bit dissatisfied with the results. Only 10 classes were held per month with only five students attending each class. Out of an employee population of 4,000, only 600 were able to get training each year.

To Phil Camillo, a former public school teacher and head of Steelcase's training program, this method seemed futile and self-defeating.

One year ago, Camillo decided enough was enough. So he set out to design a learning center within Steelcase that would allow the company's end users to teach themselves in a state-of-the-art multimedia environment. The premise was simple: Given control of their own learning program, students will ultimately get far more out of the experience.

"I wanted to avoid the typical classroom setting in which the teacher knows everything and the student knows nothing," Camillo says.

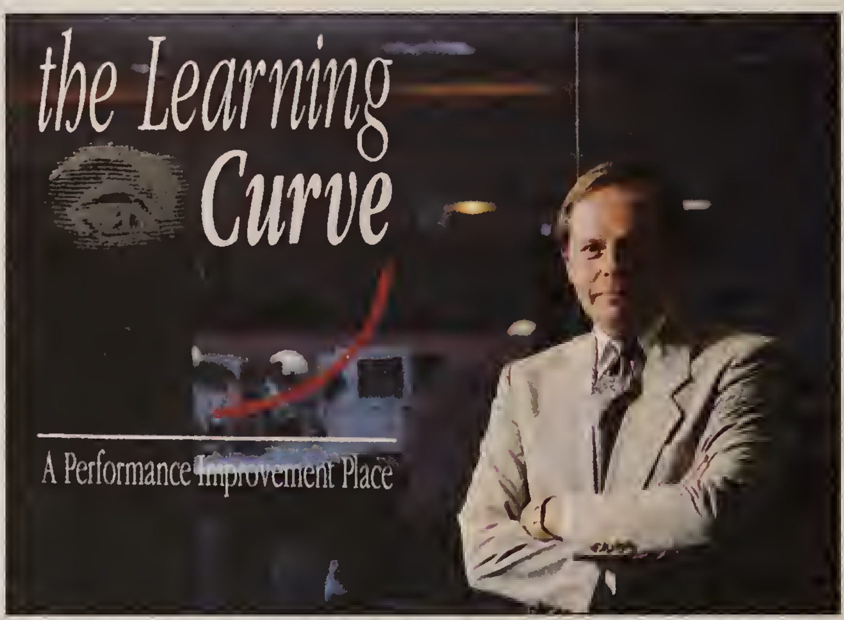
"By turning over the learning responsibility to the student, it allows him to schedule his own time, plan his own curriculum and manage his own education," he explains. "It's a basic shift in thinking."

Aiming for the wallet

Before he could proceed, Camillo had to sell the concept to management. He pushed where he knew he would get a response: at the purse strings. He promised a reduced training budget — $80,000 rather than $120,000 — with far more participation and payoff.

Working closely with IS, Camillo set up The Learning Curve, an in-house multimedia training room filled with computer-based training, video and audio learning modules, IBM personal computers, Apple Computer, Inc. Macintoshes, laser discs, books, magazines and periodicals. The center's courseware featured 300 multimedia training programs, covering everything from PC software to project management to leadership skills to product information.

Since its opening last May, The Learning Curve has far exceeded Steelcase's and Camillo's expectations. In nine months, the facility has served nearly 3,000 students. When the center is a full year old, Camillo said, he expects 4,000 students will have used the classroom, including repeat users. He figures that the cost of training has already been reduced from $200 per student per year to $20.



Steelcase's Camillo *brought training to a do-it-yourself level*

Training wheels

Camillo designed some innovative tools to facilitate students' introduction to and use of the center. The IS department helped him create student identification cards with bar codes so that each visit and use of the center could be easily tracked. Students begin their training with an introduction by the on-site counselor, who guides them to a workstation where they run an expert systems program.

The expert system is a two-module program that allows students to determine how they learn best and helps design their courseware.

The first module, the Learning Style Adviser, does a right brain/left brain analysis, giving students a chance to determine their best learning style.

The second module, the Training Plan Adviser, questions students about the tasks they want to perform and determines their level of experience with various technologies.

Success story

Student response bears out Camillo's enthusiasm. For example, Bob Hall, Steelcase's manager of facility management, did a course of self-directed training at The Learning Curve, seeking information about certain computer-aided design tools.

Hall needed help in new program pricing, development costs, distribution costs and the like. "I found the experience quite productive," Hall says. "I could go on my own time, on my own terms. It was great for my schedule. I definitely want to use the resource again."

Hall, an 18-year Steelcase veteran, says that prior to the establishment of The Learning Curve, he would have been forced to look outside for help with such tools. "I just never did that," he says. "Now, I have a place inside where I can find these tools."

Camillo says that the gee-whiz technology is helpful in getting students into the center and targeting their courseware. But the biggest reason for success is "turning over the learning responsibility to the student. If you are given control, you tend to move toward that environment," he says.

Rifkin is a free-lance writer and a former *Computerworld* features editor.

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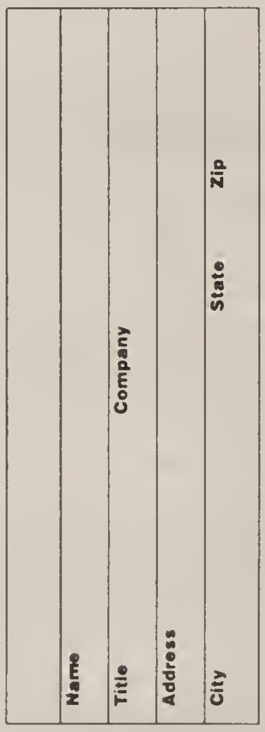

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INDUSTRY ALMANAC

INSIDER ACTION

Several high-level executives at major semiconductor firms have recently cut loose a substantial part of their insider holdings.

One of the hotter potatoes was **Motorola, Inc.** Company vice presidents, directors and other top dogs have sold more than half a million Motorola shares since December 1990, according to reports filed with the Securities and Exchange Commission through April. Likewise, nine executives at **Cypress Semiconductor Corp.** trimmed their portfolios by a combined 255,000 common shares (see chart below).

Some Wall Street watchers said widespread insider selling portends a near-term drop in stock prices. Executives in this case "are probably cashing in," said John Girtner, an analyst at Van Kasper & Co. in San Francisco. Consistent insider selling within a single sector usually signals that those stocks have topped out for the time being, Girtner said. Indeed, some chip firms hit new 52-week highs during the semiconductor group's first-quarter climb of more than 30%.

The group, however, may be in for a decline. A few factors are converging to cause a potential fall, according to Daniel Klesken, an analyst at Prudential Securities, Inc. For example, chip orders have been strong, but the book-to-bill ratio, which tracks the number of new orders received against those actually shipped, is expected to undergo a seasonal decline now through September. Profit-taking may pervade in anticipation of this cyclical lull, Klesken noted.

Also, the buoyant buy mood that helped propel the Dow Jones industrial average past 3,000 on April 17 has receded, in part because of poor reports from some big technology names, according to a recent analysis from Donaldson, Lufkin & Jenrette, Inc.

KIM S. NASH

Out of our hands

High-volume insider selling by semiconductor executives since December, as reported to the Securities and Exchange Commission through May 1

	No. shares sold[1]	Total dollar value (in millions)[2]	No. selling[3]
Altera Corp. San Jose, Calif.	194,308	$2.59	7
Advanced Micro Devices, Inc. Sunnyvale, Calif.	31,600	$.19	3
Chips and Technologies, Inc. San Jose, Calif.	102,000	$1.05	2
Cypress Semiconductor Corp. San Jose, Calif.	255,593	$3.20	9
Dallas Semiconductor Corp. Dallas	62,665	$.56	2
Intel Corp. Santa Clara, Calif.	27,599	$1.37	5
Motorola, Inc. Schaumburg, Ill.	561,817	$24.08	10
Texas Instruments, Inc. Dallas	48,274	$2.00	3
Xilinx, Inc. San Jose, Calif.	168,513	$2.36	6

[1] Common shares directly owned by company executives sold on open market

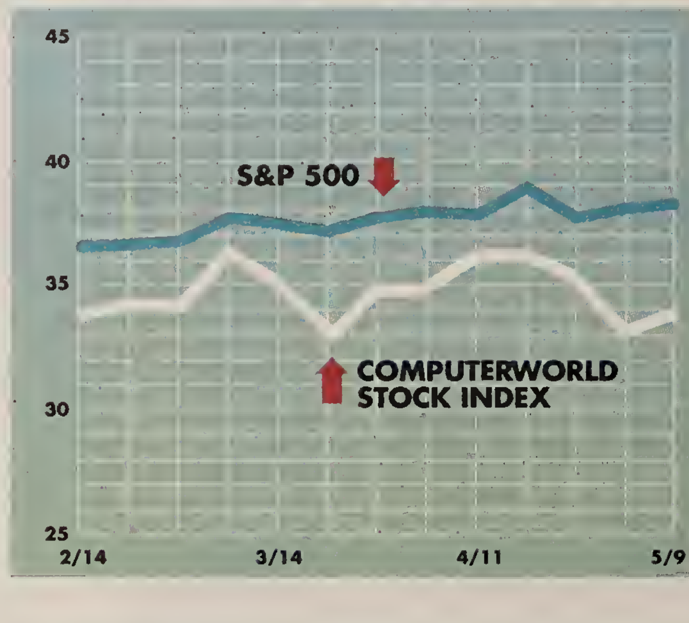
[2] Calculated according to stock prices on days of sales

[3] Board members, directors, vice presidents, presidents and chairmen

Source: Invest/Net, Inc.

CW Chart: Doreen St. John

STOCK TRADING INDEX



THIS WEEK'S HIGHLIGHTS

- Apple Computer, Inc. gained 1¾ points, closing Thursday at 50¾. On Monday, Prudential Securities, Inc. advised investors to sell the stock, citing poor currency translation rates caused by the dollar's strengthening value overseas.
- IBM joined Hewlett-Packard Co. and Compaq Computer Corp. in the rush to cut workstation prices. IBM lost ground early in the week, then rebounded, ending Thursday unchanged at 105⅞. HP moved up 1⅛ points to 49, and Compaq gained 1¼ points to 51.
- Spreadsheet rivals Borland International, Inc. and Lotus Development Corp. both gained after introducing new products last week. Lotus jumped 1⅜ points to 34⅝, while Borland surged 3¼ to 54.
- Amdahl Corp. picked up 1⅞ points to 16⅞. The stock has advanced 25% since mid-March.
- Microsoft Corp., which announced a 3-for-2 stock split last week, soared 5¼ points to close at 105¾.

Computerworld Friday Stock Ticker

CLOSING PRICES FRIDAY, MAY 10, 1991

TOP PERCENT GAINERS

Computer Automation Inc.	40.00
Hogan Systems Inc.	36.84
Advanced Micro Devices	17.53
Network Equipment Tech.	14.52
Amdahl Corp.	11.67

TOP PERCENT LOSERS

Businessland Inc.	-23.08
Masstor Systems	-21.90
Artel Communication Corp.	-12.50
Alliant Computer Sys.	-11.11
Wang Labs Inc. (b)	-11.11

TOP DOLLAR GAINERS

Autodesk Inc.	5.13
Intel Corp.	4.50
Aldus Corp.	2.75
Apple Computer Inc.	2.25
Dell Computer Corp.	2.13

TOP DOLLAR LOSERS

Matsushita Electronics	-5.25
American Info Techs Corp.	-4.63
Nynex Corp.	-3.88
Southwestern Bell Corp.	-3.25
Bellsouth Corp.	-3.13

Communications and Network Services Off 1.02%

Exch	52-Week	Range		May 10 Close	Wk Net Change	Wk Pct Change
OTC	19.00	5.38	3 COM Corp.	8.38	-0.13	-1.47
NYS	69.75	52.50	American Info Techs Corp.	59.13	-4.63	-7.25
NYS	44.13	29.00	AT&T	36.00	-1.38	-3.68
OTC	6.63	0.88	Artel Communication Corp.	1.75	-0.25	-12.50
NYS	56.25	39.50	Bell Atlantic Corp.	45.50	-3.13	-6.43
NYS	57.63	47.88	Bellsouth Corp.	47.88	-3.13	-6.13
NYS	44.00	13.13	Cabletron Systems	38.88	-0.38	-0.96
OTC	25.88	8.25	Compression Labs Inc.	20.00	0.88	4.58
NYS	41.25	23.38	Contel Corp.	41.00	0.00	0.00
OTC	5.13	2.44	Data Switch Corp.	4.25	0.13	3.03
NYS	26.75	8.88	Digital Comm. Assoc.	18.50	0.63	3.50
OTC	25.25	12.25	Dynatech Corp.	20.25	1.00	5.19
OTC	12.88	5.50	Fibronix Int'l Inc.	9.25	0.25	2.78
OTC	4.00	1.75	Gandalf Technologies Inc.	3.25	0.00	0.00
NYS	4.50	1.63	General Datacomm Inds.	3.00	0.00	0.00
NYS	34.13	23.50	GTE Corp.	29.38	-1.75	-5.62
OTC	4.50	0.75	Infotron Systems Corp.	1.13	0.00	0.00
NYS	60.88	40.25	ITT Corp.	58.25	-1.88	-3.12
OTC	44.13	17.88	MCI Commmunications Corp.	28.88	0.88	3.13
OTC	21.00	2.75	Microcom Inc.	6.25	-0.25	-3.85
NYS	11.63	4.00	Network Equipment Tech.	8.88	1.13	14.52
OTC	14.63	4.00	Network General	8.13	0.13	1.56
OTC	15.50	8.13	Network Systems Corp.	12.25	-0.63	-4.85
NYS	36.50	22.13	Northern Telecom Ltd.	36.50	0.75	2.10
OTC	58.50	17.25	Novell Inc.	54.38	1.75	3.33
NYS	89.50	67.00	Nynex Corp.	69.13	-3.88	-5.31
NYS	47.88	36.25	Pacific Telesis Group	39.25	-2.38	-5.71
ASE	15.38	4.75	Pennil Corp.	14.50	0.00	0.00
NYS	29.13	8.88	Scientific Atlanta Inc.	14.38	-0.25	-1.71
NYS	58.88	47.25	Southwestern Bell Corp.	49.88	-3.25	-6.12
NYS	46.38	20.63	United Telecom	28.00	1.88	7.18
NYS	40.75	32.38	U S West Inc.	35.00	-2.50	-6.67

Computer Systems Off 0.01%

Exch	52-Week	Range		May 10 Close	Wk Net Change	Wk Pct Change
OTC	8.75	0.56	Alliant Computer Sys.	1.00	-0.13	-11.11
ASE	18.88	10.00	Amdahl Corp.	16.75	1.75	11.67
OTC	73.25	24.25	Apple Computer Inc.	51.25	2.25	4.59
OTC	13.88	4.25	Archive Corp.	7.38	0.13	1.72
OTC	32.75	7.50	AST Research Inc.	23.75	1.25	5.56
NYS	7.38	4.00	Bolt, Beranek & Newman	6.38	-0.25	-3.77
NYS	21.63	4.50	Commodore Int'l	15.25	0.13	0.83
NYS	74.25	35.50	Compaq Computer Corp.	50.75	0.50	1.00
OTC	1.75	0.13	Computer Automation Inc.	1.75	0.50	40.00
NYS	21.13	6.75	Control Data Corp.	11.50	-0.63	-5.15
NYS	20.88	8.38	Convex Computer	17.38	-1.25	-6.71
NYS	51.25	20.00	Cray Research Inc.	33.75	-0.75	-2.17
NYS	18.13	3.50	Data General Corp.	15.63	-0.88	-5.30
NYS	3.25	0.75	Datapoint Corp.	1.38	-0.13	-8.33
OTC	30.63	8.25	Dell Computer Corp.	22.88	2.13	10.24
NYS	95.13	45.50	Digital Equipment Corp.	65.88	-0.25	-0.38
NYS	36.13	13.75	Harris Corp.	25.38	-0.50	-1.93
NYS	55.13	24.88	Hewlett Packard Co.	48.25	2.00	4.32
NYS	139.75	96.25	IBM	103.25	-0.38	-0.36
OTC	14.00	7.75	Information Int'l	8.00	-0.25	-3.03
OTC	31.50	10.50	Intergraph	29.63	0.63	2.16
NYS	2.75	0.50	MAI Systems Corp.	0.69	-0.06	-8.27
NYS	149.75	114.00	Matsushita Electronics	122.75	-5.25	-4.10
OTC	26.00	9.00	Mentor Graphics Corp.	15.25	0.00	0.00
NYS	104.25	44.50	NCR Corp.	103.13	-0.38	-0.36
OTC	35.50	11.00	Pyramid Technology	24.63	0.63	2.60
OTC	34.00	9.75	Sequent Computer Sys.	13.25	-1.00	-7.02
NYS	47.25	18.00	Silicon Graphics	36.00	1.63	4.73
NYS	37.25	14.63	Stratus Computer Inc.	33.00	1.38	4.35
OTC	38.63	15.00	Sun Microsystems Inc.	36.50	-0.63	-1.68
NYS	28.88	8.88	Tandem Computers Inc.	15.13	-0.25	-1.63
NYS	39.50	23.50	Tandy Corp.	31.88	-0.38	-1.16
OTC	32.00	6.75	Teradata	17.00	0.00	0.00
NYS	7.88	1.38	Ultimate Corp.	5.25	-0.25	-4.55
NYS	15.88	1.75	Unisys Corp.	4.00	-0.25	-5.88
ASE	5.75	2.00	Wang Labs Inc. (b)	3.00	-0.38	-11.11

Software & DP Services Off 1.00%

Exch	52-Week	Range		May 10 Close	Wk Net Change	Wk Pct Change
OTC	63.00	17.00	Adobe Systems Inc.	52.50	-0.50	-0.94
OTC	59.88	20.25	Aldus Corp.	49.13	2.75	5.93
OTC	28.50	12.00	American Mgmt. Systems	27.25	0.00	0.00
OTC	18.25	7.50	American Software Inc.	10.88	-0.63	-5.43
NYS	4.63	1.38	Anacomp Inc.	3.63	-0.25	-6.45
OTC	23.50	10.00	Analysts Int'l	15.50	0.00	0.00
OTC	13.25	4.88	Ashton Tate	8.88	0.13	1.43
OTC	10.25	4.00	ASK Computer Sys.	8.00	0.00	0.00
NYS	36.50	22.63	Auto Data Processing	36.50	1.75	5.04
OTC	60.25	32.00	Autodesk Inc.	58.25	5.13	10.02
OTC	31.50	14.00	BGS Systems Inc.	26.00	-0.50	-1.89
OTC	43.88	17.75	BMC Software Inc.	38.75	-2.25	-5.49
OTC	21.50	11.00	Boole & Babbage Inc.	13.25	0.75	6.00
OTC	64.25	14.50	Borland Int'l	51.13	0.38	0.74
NYS	9.75	0.88	Businessland Inc.	1.25	-0.38	-23.08
OTC	20.88	5.13	Cognos Inc.	17.00	-1.50	-8.11
NYS	16.88	4.38	Computer Associates	7.88	0.13	1.61
OTC	17.75	10.75	Computer Horizons	11.75	-1.00	-7.84
NYS	73.25	36.75	Computer Sciences	67.50	-1.63	-2.35
NYS	11.75	6.63	Computer Task Group	9.13	-0.88	-8.75
OTC	25.25	13.00	Comshare Inc.	17.63	-0.63	-3.42
OTC	16.00	3.75	Corporate Software	10.75	-0.50	-4.44
NYS	49.00	27.88	General Motors E (EDS)	47.38	-0.63	-1.30
OTC	18.75	7.25	Goal Systems Int'l	13.25	-1.00	-7.02
OTC	6.50	1.88	Hogan Systems Inc.	6.50	1.75	36.84
OTC	21.00	7.75	Information Resources	21.00	1.38	7.01
OTC	17.50	2.63	Informix Corp.	5.88	-0.38	-6.00
OTC	7.88	1.38	Intellicorp Inc.	1.75	-0.19	-9.70
OTC	8.25	2.50	Interleaf Inc.	6.88	0.25	3.77
OTC	43.25	10.00	Knowledgeware Inc.	33.25	-0.25	-0.75
OTC	45.00	16.75	Legent Corp.	29.50	-1.75	-5.60
OTC	39.25	12.50	Lotus Development	32.38	-2.00	-5.82
OTC	32.00	13.63	Micrografx	19.00	0.00	0.00
OTC	117.50	50.75	Microsoft Corp.	102.75	1.50	1.48
NYS	10.50	4.00	On Line Software Int'l	8.13	0.00	0.00
OTC	24.00	4.88	Oracle Systems	9.00	-0.38	-4.00
NYS	14.63	7.00	Pansophic Systems	11.88	-0.13	-1.04
OTC	9.25	1.25	Phoenix Technologies	7.25	0.00	0.00
NYS	52.00	33.38	Policy Management Sys.	48.25	1.38	2.93
NYS	23.63	11.50	Reynolds & Reynolds	20.13	-0.88	-4.17
OTC	16.13	6.88	Sage Software Inc.	10.50	0.38	3.70
OTC	25.50	14.75	SEI Corp.	25.00	0.50	2.04
OTC	21.75	12.25	Shared Medical Systems	20.88	0.13	0.60
OTC	35.25	12.00	Software Publishing Corp.	22.88	1.88	8.93
NYS	14.63	5.50	Sterling Software	13.38	0.00	0.00
OTC	26.00	9.50	Sungard Data Sys.	16.75	-0.50	-2.90
OTC	55.88	17.75	Symantec Corp.	45.25	-2.75	-5.73
NYS	24.50	4.50	System Center Inc.	9.00	-0.63	-6.49
OTC	37.25	12.75	System Software Assoc.	16.75	-1.25	-6.94
OTC	27.38	4.75	Weitek	13.50	-0.50	-3.57

Semiconductors Up 1.76%

Exch	52-Week	Range		May 10 Close	Wk Net Change	Wk Pct Change
NYS	14.25	3.63	Advanced Micro Devices	14.25	2.13	17.53
NYS	12.50	5.50	Analog Devices Inc.	11.25	0.38	3.45
OTC	21.75	5.25	Chips & Technologies	9.25	-0.50	-5.13
OTC	55.25	28.00	Intel Corp.	53.00	4.50	9.28
NYS	13.00	5.13	LSI Logic Corp.	10.63	-0.25	-2.30
NYS	19.13	6.75	Micron Technology	15.00	-0.38	-2.44
OTC	21.50	7.25	MIPS Computer Systems	17.38	-0.88	-4.79
NYS	88.38	45.75	Motorola Inc.	63.75	0.88	1.39
NYS	9.00	3.00	National Semiconductor	7.63	-0.25	-3.17
NYS	47.63	22.50	Texas Instruments	40.13	1.38	3.55
OTC	12.25	3.00	VLSI Technology	10.50	0.38	3.70
ASE	14.88	4.00	Western Digital Corp.	5.13	0.00	0.00

Peripherals & Subsystems Off 1.79%

Exch	52-Week	Range		May 10 Close	Wk Net Change	Wk Pct Change
OTC	2.75	0.88	Apertus Technologies	2.44	-0.06	-2.48
OTC	24.00	7.50	Banctec Inc.	13.50	0.25	1.89
OTC	17.50	4.25	Cambex Corp.	12.50	-0.50	-3.85
ASE	11.75	4.13	Cognitronics Corp.	9.63	0.00	0.00
NYS	31.25	14.63	Conner Peripherals	22.38	-2.13	-8.67
ASE	22.00	7.00	Dataram Corp.	10.25	0.38	3.80
NYS	12.50	4.25	EMC Corp.	11.88	-0.13	-1.04
NYS	47.25	33.75	Eastman Kodak Co.	41.38	0.25	0.81
OTC	11.25	4.75	Emulex Corp.	9.00	0.50	5.88
OTC	34.50	14.00	Evans & Sutherland	19.75	-1.75	-8.14
OTC	6.50	3.75	Iomega Corp.	5.75	0.19	3.36
OTC	28.25	6.75	IPL Systems Inc.	24.00	-3.00	-11.11
OTC	1.63	0.13	Masstor Systems	0.78	-0.22	-21.90
OTC	17.00	2.63	Maxtor Corp.	3.88	-0.13	-3.13
OTC	18.00	4.38	Micropolis Corp.	14.75	1.25	9.26
NYS	93.75	73.63	3M Corp	88.38	0.38	0.43
OTC	14.50	6.00	Printronix Inc.	8.00	-0.75	-8.57
NYS	24.75	8.50	QMS Inc.	23.13	0.38	1.65
OTC	18.25	8.25	Quantum Corp.	13.13	-0.13	-0.94
NYS	7.63	4.38	Recognition Equipment	7.00	-0.50	-8.67
OTC	11.50	4.00	Rexon Inc.	9.88	-0.13	-1.25
OTC	19.88	5.63	Seagate Technology	12.00	0.13	1.05
NYS	43.00	11.00	Storage Technology	43.00	-2.25	-4.97
OTC	4.75	1.25	Tandon Corp.	3.50	0.00	0.00
NYS	26.38	11.63	Tektronix Inc.	22.88	-0.50	-2.14
OTC	0.63	0.16	Televideo Systems	0.38	0.03	9.01
NYS	60.13	29.00	Xerox Corp.	56.00	-1.25	-2.18

Leasing Companies Off 1.94%

Exch	52-Week	Range		May 10 Close	Wk Net Change	Wk Pct Change
OTC	16.25	6.88	Amplicon Inc.	15.25	-0.75	-4.69
NYS	28.38	14.63	Comdisco Inc.	25.88	-1.13	-4.17
OTC	16.25	9.25	LDI Corporation	14.88	-0.13	-0.83
OTC	5.75	2.25	Selecterm Inc.	3.75	0.00	0.00

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NEWS SHORTS

IBM vacation plan aims at costs

IBM's ongoing effort to rout inefficiency from its operations surfaced again last week as the company issued internal cost-cutting guidelines aimed at travel and vacation practices. The firm declared open season on travel expenses and off-site meetings. Employees were asked to use their allotted vacation days sooner rather than later and to cluster vacation days with official company days off whenever possible. Under the program, which includes a cutback in the number of vacation days an employee will be allowed to carry over to future years, IBM is shutting down headquarters for the week of July 4, forcing staff to take three vacation days along with the official July 4 and July 5 holidays.

....

Sears to push networks

Sears Business Centers, a division of Sears, Roebuck and Co., formed a Network Integration Division last week. While Sears Business Centers said it sold more than 1,800 local-area networks in 1990, President William Lenahan called the formation a "strategic necessity."

....

Johns Hopkins to honor innovators

Johns Hopkins University in Baltimore will award a $10,000 grand prize to the winner of its nationwide "Search for Computing Applications to Assist Persons with Disabilities." The national search is a competition for ideas, systems, devices and computer programs to aid the more than 25 million Americans with physical or learning disabilities. The grand prize will be awarded at the National Exhibition at the Smithsonian Institute in Washington, D.C.

....

Arthur Young alumni win

Systems integrator Technology Solutions Co., based in Chicago, won its case against Big Six accounting firm Arthur Young Co. (now Ernst & Young). TSC, which was formed by 11 former Arthur Young employees, sued Arthur Young in a California court to continue working for a former Arthur Young client in California, in hopes of having noncompete clauses in their contracts voided.

....

Callaghan to head Shearson group

Shearson Lehman Brothers, Inc.'s information systems profit center spin-off last week tapped the former top IS executive at competitor Bear Stearns & Co. as its president. Jeremiah M. Callaghan, 48, will head the American Express Securities Information Group, the unit formed in January from the brokerage IS operations of Shearson. Callaghan left Bear Stearns in 1987 to do community service and philanthropic work in the New York metropolitan area. Shearson has abandoned plans reported earlier to merge back-office operations with Prudential Securities, Inc., a spokesman said.

....

IBM adds PCs in Japan

IBM introduced several personal computers in Japan earlier this month that set a new low price point for Personal System/2-equivalent units. The models, some priced at just $1,445 excluding monitor and keyboard, fill out the Japanese PS55 and 55Z lines. It does not follow that such a low-cost system would be unveiled in the U.S. because the customer base is different, an IBM spokesman said.

....

Lotus ships Freelance package

Lotus Development Corp. is now shipping Freelance Graphics for DOS 4.0, which was first announced in March. It runs in 640K bytes of memory and features the following: a graphical what-you-see-is-what-you-get environment; Grandview LT, a customized version of Symantec Corp.'s outliner; enhanced presentation management tools; new charting capabilities; additional symbols; and master presentation backgrounds. Prices start at $495. A Windows version of Freelance is slated to be shown at the Windows World Pavilion at Comdex Spring '91 next week.

Wang cuts research, delays plans

BY SALLY CUSACK
CW STAFF

LOWELL, Mass. — The waters were still roiling last week at Wang Laboratories, Inc., where an unconfirmed number of employee layoffs occurred and scheduled product and strategy announcements were postponed for approximately 30 days.

Various sources reported that 120 research employees were laid off at Wang.

While Wang would not confirm the exact number, Frank Ryan, vice president of corporate communications, acknowledged that the cutbacks are part of the company's previously announced plans for ongoing turnaround efforts.

Ryan indicated that the next installment of Wang's Office 2000 strategy has been delayed until early June in order for Wang to iron out the fine details.

Ryan also responded to rumors that the proprietary VS line was to be discontinued after the delivery of one more large VS system by citing Chief Executive Officer Rick Miller's letter to customers, which went out early last month.

In the letter, Miller pledged Wang support for VS customers through new products and continuing services. The company is also making a transition to provide an open desktop-oriented strategy through the recently announced Office 2000.

"We realize that there are rational and reasonable concerns among our customers, and we are doing everything humanly possible to get the message out," Ryan said, alluding to Wang's commitment to VS clients.

Roger Sullivan, vice president of BIS Strategic Decisions, a consulting firm in Norwell, Mass., said Wang will have customer migration and protection plans in place as it unfolds its Office 2000 strategy.

"It's ridiculous to suggest that Wang would slam the door on the VS installed base," Sullivan said, adding that he is confident the next stage of Office 2000 announcements will be substantial and structured. "They're taking this very, very seriously. It's not your typical Wang strategy announcement of years past."

Pan Am

FROM PAGE 1

services and resource development as well as IS services.

The departure comes at a tough time for Pan Am, which is suffering an IS turnover rate double that of last year. Up until now, Wagner had played the role of staff cheerleader, "making people believe there is significant life for Pan Am and for their career here," he said.

Wagner was apparently less sure of his own career's longevity with the airline. The most likely scenario for Pan Am's salvation is a merger with one of the larger domestic carriers, he said, "and they certainly don't need two CIOs at that point." Pan Am has already sold routes and merged reservations data and frequent flyer programs with United Airlines.

A Pan Am spokeswoman said the company will replace Wagner, though a successor has not yet been named. The candidate will likely be from within the company; Pan Am has found it difficult to hire outsiders because of the Chapter 11 onus.

Wagner's departure is the latest blow to the firm's IS department. Since last year, the airline has put several IS developments on hold, cut back on others and trimmed its IS budget and staff about 25% and 30%, respectively. It has shifted focus from strategic projects with a three- to four-year implementation time to tactical developments taking no more than six months to pay off.

Insiders expected few IS changes to result from Wagner's departure. "We have our hands full with the financial reorganization, and we aim to continue doing the best we can for Pan Am," said Al Castan, Pan Am's system director of telecommunications.

Since plans to outsource the airline's IS staff and systems came as a mandate from Pan Am's top executives, a feasibility study is expected to continue. The proposed contract would be worth $500 million over five years [CW, April 8].

Wagner said the outsourcing plans for his department were not a factor in his decision to move on and that a significantly greater salary and stock package attracted him to Conrail.

At Conrail, Wagner said, he looks forward to evolving systems to aid in "the firm's transition from a railroad company to a transportation company." The company has been endeavoring to allow its systems to communicate with those of other rail and trucking services in order to create a seamless system for customers whose freight is transported by multiple carriers.

Wagner has a long history with IS in the transportation industry, including seven years with Pan Am and several years with another airline and Avis Rent-A-Car Systems, Inc. "Whether you choose a plane, train or car, companies that want to be successful in the 1990s need to look at themselves as being [overall] transportation companies," Wagner said.

Bad financial news expected from Businessland this week

BY JAMES DALY
and RICHARD PASTORE
CW STAFF

SAN JOSE, Calif. — The Businessland, Inc. reseller chain is expected to report a potentially crippling quarterly financial loss early this week. Businessland spokesman Tom Pelandini said the company's revenue line "hasn't held up as well as we'd hoped," but he would not comment on projected losses.

Sources close to Businessland said the operating loss could be as high as $15 million, with additional onetime restructuring and lawsuit settlement charges on top of that. Other sources put the figure at $50 million. Until recently, Wall Street had expected the company to lose anywhere from $3 million to $10.5 million.

More unnerving, analysts said, may be the expected 15% drop in sales over the previous quarter last year to about $275 million. Businessland has built its restructuring on a certain level of revenue, which it is unlikely to realize. That means its costs become a larger percentage of overhead, which, in turn, accentuates losses, analysts said.

The dip in sales is indicative of the entire domestic personal computer market this past quarter, analysts said. The firm's turnaround is a "difficult challenge in its own right, but in an environment such as this, it's nearly impossible," said Kevin McCarthy, an analyst at Mabon Nugent & Co. in New York.

A large revenue dip and significant quarterly loss could be potentially devastating for Businessland, which has suffered six consecutive nonprofitable quarters, lost $35 million since July 1, 1990, and cut 35% of its employees since last June.

To its advantage, Businessland has postponed the due dates of much of its debt, including a reported $25 million from IBM. It also has about $60 million in cash on hand to stave off disaster. "But they won't turn around if they continue to have these losses," Dillon, Read & Co. analyst Benny Lorenzo said.

Merger

FROM PAGE 1

months to prepare for it.

"I think it's advantageous to both parties," said Noel R. Levasseur, president of First American Data Services, an NCR user. "It adds credibility to NCR, and for AT&T, like their acquisition of Paradyne, they're acquiring something stronger to bring them up to speed."

NCR's Williamson (left) and Exley *are treating the deal as if NCR is buying AT&T — rather than the other way around*

Gordon Kerr, MIS director at Hyatt Hotels and Resorts Corp., which uses NCR point-of-sale systems and AT&T System 7000 high-end Unix boxes, agreed: "In the computer business, it will only affect us in a positive way as far as I can tell. I've committed to Unix systems, so if I don't like the combined companies, switching vendors is of little concern."

Robert L. Merrick, MIS director at Windmere Corp. in Miami Lakes, Fla., an NCR user employing V series mainframes, said he expects business as usual, "as long as AT&T doesn't go in and change NCR." He asked, "Since [AT&T] didn't make their Computer Systems Division work, why would they go in and screw around with an outfit that's starting to make progress?"

Merrick's question was echoed by a number of NCR users. At the press conference announcing the deal, AT&T Chairman Robert E. Allen, along with Exley and President Gilbert N. Williamson, talked as though NCR were buying AT&T.

Most users and analysts said a successful merger strategy will see AT&T treat NCR like Greta Garbo and leave it alone.

Allen reasserted during the press conference that "NCR's corporate structure, corporate leadership and name will remain intact." Analysts said AT&T has indicated it will follow a hands-off policy.

"It's really tough to say at this point," said Stuart Woodring, director of software strategy research at Forrester Research, Inc. in Cambridge, Mass. "Once there is a clear mandate for who is in charge and how much power they have, then things will fall into place."

Woodring added that if NCR finds itself needing to get decisions approved by AT&T, "then we're probably going to have a lot of compromises, and that is not going to make anybody overly happy."

Some users want more information on how the merger will actually work out. "We'd like to know exactly how this is going to affect NCR, and it's kind of hard to read between the lines at this point," said Larry Hicks, manager of information systems at Cardinal Scale Manufacturing Co.

Barry Gilmore, president of Capricorn Computing, Inc., a Unix consultancy in Lake Forest, Calif., took a more fatalistic view: "You know they aren't going to leave NCR alone like they said they were."

Williamson said last week that "the migration path and product directions are going to be relatively easy to maintain. I don't see any huge issues there. I think we're going to be able to easily protect both organizations' customer product direction."

Still in control

One analyst said he thinks the NCR organization will maintain control over the deal. "AT&T is emphatically coming down in support of NCR's plans and will subordinate its own prior strategies to NCR's," said Thomas Nolle, president of CIMI Corp., a technology assessment firm.

That is a direction that would be welcomed by David Evans, vice president of IS at J. C. Penney Co. in Dallas, a beta-test site for some NCR products. "I think that NCR has announced a tremendously elegant strategy, and they have a lot of work to do to pull it off. I hope that this drama is not detracting from that effort," Evans said.

AT&T indicated, however, that NCR's System 3000 is not the only product line NCR will sell. A spokesman referred to "the next generation of products from the combined companies" and said this could likely mean some "amalgam" of System 3000 machines and AT&T offerings. Software is less clear.

NCR shareholders must approve the merger by at least a two-thirds vote. Allen and Exley estimated the process will take four to five months.

In the meantime, Exley and AT&T Computer Systems President Richard McGinn will lead a transition team. After the merger is completed, Exley will retire from NCR, but he will remain as a consultant. Williamson will become chief executive officer, joining AT&T's board and executive management committee.

R. Elton White, currently NCR's executive vice president, will then become president.

Cooperative triad

NCR's vision of the future of computing — its Open, Cooperative Computing Architecture (OCCA) — earned it AT&T's acquisitive interest.

OCCA consists of three parts:

- Cooperation, a distributed, object-oriented software strategy based on Microsoft Corp.'s Windows 3.0 and Hewlett-Packard Co.'s New Wave.
- System 3000 series hardware, seven platforms ranging from Level 3100 portable computers, including a stylus-based notepad built around the Intel Corp. 80386SL chip, to Level 3700 machines, which will feature more than 1,000 loosely coupled microprocessors running at more than 100,000 million instructions per second.
- Open Network System, a networking and network management strategy.

The OCCA strategy effectively made NCR a start-up company with $6 billion in revenue.

Absorbing AT&T could make it a $7.5 billion start-up, although one that may lack the profit margins enjoyed by NCR, which benefits from having all of its products based on the same basic engine but would probably have seen a slump in earnings as it made the transition to its OCCA strategy.

Unix may smooth migration wrinkles

BY MICHAEL FITZGERALD
CW STAFF

No one is predicting it will be easy for AT&T to smoothly absorb NCR Corp. Some said it could work well, though.

"I've seen [AT&T and NCR] work together, and I'm encouraged," said Jim Wegmann, senior vice president of the Electronic Data Processing and Systems Division at Talman Home Federal Savings and Loan Association in Chicago.

Both sides agree that current users will be migrated to systems that run AT&T's Unix System V Release 4. The hardware platform looks almost certain to be NCR's System 3000 series, top to bottom.

This does not mean AT&T's 3B2 will be killed. Rather, Robert Kavner, AT&T's group executive for data/federal systems, said he expects it will be upgraded and sold into its installed base.

In networking, NCR is the OEM for AT&T's Starview. AT&T executives said its 10Base-T networking hardware and NCR's Token Ring focus would work well as a "chocolate and vanilla product offering."

The software picture is murkier. AT&T has several products that bear similarities to strategies NCR has announced.

AT&T's Rhapsody, a workflow automation package based on Hewlett-Packard Co.'s New Wave, is in use at several sites. NCR's Cooperation, also New Wave-based, has work-flow elements to it. However, Judith Hurwitz, vice president of Patricia Seybold's Office Computing Group in Boston, said Cooperation is largely an object-oriented development tool.

AT&T's Tuxedo, a Unix online transaction processing (OLTP) package, is a low-end package that does not compete with NCR's mainframe-oriented Top End Unix OLTP. How that will influence AT&T's agreement with Unisys Corp. to develop a mainframe version of Tuxedo is unclear. Problems could develop quickly if the two sides start debating the relative merits of their product lines.

"If NCR decides to take part of AT&T around the corner of the barn and shoot it, [AT&T] has to let them do it," said Stuart Woodring, director of software strategy research at Forrester Research, Inc. in Cambridge, Mass.

It is widely assumed that the merger will not affect NCR's core retail and financial systems businesses. "AT&T is not stupid," one user commented.

Food chain

AT&T's takeover of NCR is the biggest acquisition in the computer industry, which has seen many buyouts in recent years

1986	Burroughs Corp. acquires Sperry Corp. for $4.8 billion to form Unisys Corp.
1986	Honeywell, Inc. sells 57.5% stake in Honeywell Information Systems to Groupe Bull and NEC Corp. In 1987, it sold almost half of its interest to those two companies for $527 million. Last month, Honeywell sold its remaining interest to Bull.
1987	Computer Associates International, Inc. buys Uccel Corp. for $800 million.
1988	Prime Computer, Inc. buys Computervision Corp. for $400 million. Nine months later, a besieged Prime sells out to J. H. Whitney & Co., which pays $1.3 billion and takes the company private.
1988	CA buys Applied Data Resources from Ameritech for $170 million.
1989	Dun & Bradstreet Corp. buys Management Science America for $333 million and merges it with McCormack & Dodge to form D&B Software.
1989	CA buys Cullinet Software, Inc. for $306 million.
1989	Hewlett-Packard Co. buys Apollo Computer, Inc. for $476 million.
1991	AT&T's $7.4 billion buyout of NCR tops the list of computer industry acquisitions in recent years.

Source: Broadview Associates

CW Chart: Doreen St. John

Away from the product side, analysts said the transition team has three major tasks: to merge the corporate cultures, to keep the technical engineers and middle management, particularly on NCR's side, around and happy and to keep customers satisfied.

While the AT&T Computer Systems Division's loss-ridden history has caused many to look at this as a case in which AT&T will gain more than NCR, analysts noted potential benefits for NCR: NCR's niches are banking and retail, while AT&T has found its successes in lodging, transportation and government. AT&T also has more extensive research and development resources and a better track record with value-added resellers and dealers than does NCR.

The changing of the guard: A rapid move

Upon the retirement of NCR Corp. Chairman and Chief Executive Officer Charles E. Exley Jr., Gilbert N. Williamson, currently president of the company, will become CEO of AT&T's NCR unit and a member of the AT&T board. In a recent interview with Computerworld *Midwest Correspondent Michael Fitzgerald last week, Williamson offered his views on the upcoming transition.*

You've indicated your biggest concern would be keeping NCR on its Open Cooperative Computing Architecture course. Does that still hold true?
I'm far less concerned today than I was a week ago . . . Bob Allen publicly committed that the direction would be our Open Cooperative Computing Architecture; the people I've met with from the computer systems division are very receptive to this idea — there's no argument about that.

What is your biggest concern at this time?
My biggest concern is to get the job done as quickly as possible. It is forecast that the legal aspect of this could take five, maybe six months. I don't think five to six months of uncertainty is an acceptable situation. So what we're working to do is very rapidly bring the organizations together, even before the merger agreement is completed.

Is the transition team in motion?
We have selected the team, and since the [merger announcement], the team is meeting. As I speak, in this building there are guys working on the transition aspect. It's a small group that will expand over time, but it's compartmentalized from the AT&T and NCR people who have to serve the customer.

Users want to know what is going to emerge from the transition team meetings.
It's too early to tell . . . We are looking to do this as rapidly as possible, even to the extent that [with] any new requirements of customers that come up, we will team up to ensure that we provide the best solution for them, and I think we're going to be able to rapidly integrate the services capacity. In general, our No. 1 objective is to continue to serve our customers and not disturb either their product direction or their level of service.

AT&T is planning on keeping its hands off?
So far, all evidence is that we will have all the autonomy we need to be successful . . . At the same time, we want to get the benefits of our combined resources — for example, their networking capability and Bell Laboratories' technology. I think we'll have the freedom to strike that balance. The ball will be in our court.

When large equals small

A relatively small – and declining – share of NCR Corp.'s revenue is derived from sales of large computer systems

	1990	1989
Retail products	$623	$596
Financial products	$973	$802
Small computer systems/workstations	$444	$391
Midrange computer systems	$765	$850
Large computer systems	$264	$289
Communications processors	$113	$141
Other (i.e., services, semiconductors and components)	$3,103	$2,888

Revenue in millions

Source: NCR Corp. CW Chart: Marie Haines

NCR to show parallel processor

Lack of applications and target audience raises analysts' concerns

BY MICHAEL FITZGERALD
CW STAFF

NEW YORK — As if NCR Corp. wants to prove it has not been holding its breath during its takeover fight with AT&T, it will follow last week's merger announcement by unveiling its System 3600 today.

The mainframe-class machine will run on up to 288 loosely coupled Intel Corp. I486 microprocessors.

NCR must make the 3600 work if it is to succeed in its System 3000 strategy. But while analysts said they were optimistic about the possibilities of success, the lack of applications for massive parallel processing raises some doubts.

"The question is, where's the application for that?" asked Gordon Kerr, director of MIS at Hyatt Hotels Corp. in Chicago. Hyatt is using Unix in an on-line transaction processor (OLTP) environment. "I don't know that there is a ready market for a 10,000-user Unix box," he said.

The 3600 is based on fairly straightforward, existing technology. NCR essentially will link multiple versions of the eight-processor motherboard from its 3550 (in prototype now), and link this to a specialized database "cruncher" similar to that produced by Teradata Corp.

The front-end box will run off-the-shelf software, although analysts said commercial purchasers will probably develop their own specialized applications for it.

Mainframe revolution

NCR claimed that its first 3600, due to ship to beta-test sites in September with a fourth-quarter release date, will run at 2,000 million instructions per second (MIPS), or four times as fast as an IBM Enterprise System/9000. AT&T's Unix System V Release 4 will serve as the operating system.

"It could start a small revolution in mainframe computing," said George Lindamood, an analyst at Gartner Group, Inc.'s Large Computer Strategies Group in Stamford, Conn.

Pricing for the smallest 3600s will start at $855,000, with initial high-end systems costing $8 million. The boxes will cost approximately $5,000 per MIPS, according to NCR. NCR also said it will offer by the end of 1992 a 3600 that can achieve 10,000 MIPS, with an I/O bandwidth of 3.8G bytes per second and capable of processing 1,200 transactions per second.

The 3600 will be targeted toward new markets, according to analysts, who said they expect it to be used mostly by companies that develop their own applications based on large databases in an OLTP environment. In some ways, the 3600 simply contains multiple versions of NCR's 3550, eight-processor minicomputer due out later this year.

Market hunt

Analysts said it may not find a market, but they think companies with massive databases actually might want this sort of product.

"The truth is, airlines are trying already to use parallelism to keep up with demand. They have multiple [IBM] 3090s lashed together because they can't build a single monolithic processor that'll do it," Lindamood said. "NCR's saying rather than patch and tweak and design, let's build it from the ground up and do it right."

Just how much demand exists is unknown. "If there were zillions [of companies] out there wanting to do this, one would imagine there would be more competitors in the market," said David Card, an analyst at International Data Corp. in Framingham, Mass.

Global goals

FROM PAGE 1

fulfill AT&T's goals. "Let's say we were a $2 billion or $3 billion company and generating a profit — we wouldn't be the engine of growth for a $50 billion to $60 billion company."

NCR derives more than half of its sales from overseas and has done well in the vertical markets of retail and banking, but general-purpose computers represent only $1.5 billion of its $6.2 billion in sales, according to analyst estimates. In sales to large customers, it is frequently an also-ran to IBM — started by onetime NCR executive Thomas Watson Sr. — and stacks up as the fifth largest U.S. computer maker behind IBM, Digital Equipment Corp., Unisys Corp. and Hewlett-Packard Co.

NCR had been changing its structure for years to make a bigger change: the jump from being a proprietary vendor to selling open systems. It had barely set foot on this path when AT&T made its buyout bid.

NCR has to meet its delivery dates for the System 3000, the hardware side of OCCA, and for Cooperation and the Open Network System, the software side. It simultaneously has to migrate its customer base from proprietary boxes to Unix and also sell to a corporate clientele that has shunned it in the past. Now, it must also merge AT&T's computer operation with its own.

Migrating users may be the least of its worries. Surveys done by CIMI Corp., a Voorhees, N.J.-based technology assessment firm, showed that nearly 90% of NCR's users "believe emphatically" that the company will be able to migrate them successfully to Unix, and NCR has a strong history of migrating users from old products to new.

Allen would like *a global, enterprise-wide firm, but is that realistic?*

Users and analysts reported that NCR is being invited to compete for contracts at companies that previously shunned it. It is perhaps 30 days behind schedule on its System 3000 product deadlines and significantly behind on Open Network System, though its other software initiative, Cooperation, appears on target.

Whether Unix will be accepted in the commercial marketplace is a ticklish enough question that when NCR announced the pieces of its OCCA strategy (see story page 112), Steve Lair, Dataquest vice president and director of its microsystems group, called it a "bet-the-company" strategy.

Before the merger, observers generally bet that NCR could pull off its open systems gamble and do it in a big way. Today, they say they will stick by their earlier statements if AT&T lets NCR lead the way, as it has said it will do.

As for Allen's vision, analysts were less confident. "It's dangerous to make the assumption that you can just melt telecom with computers — IBM tried it with Rolm [Systems] with less than stellar success," Kidd said.

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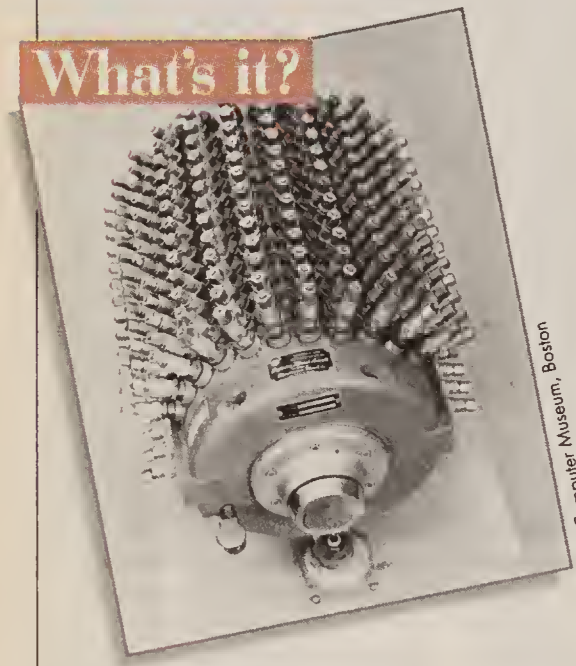
W.Y.S.I.W.Y.G.

Great names

- Chase Manhattan Bank (New York): **Elaine Bond**, senior vice president of corporate systems
- U.S. Defense Logistics Agency, Memphis Depot: **Beverly Major**, chief of technology division
- Asset Management Technology (Marblehead, Mass.): **Alan Loss**, president

What's it?


The Computer Museum, Boston

1. Porcupine pinup
2. Don King's hair curler
3. Magnetic drum memory for the Univac I

SNAZZY CORPORATE NAMES DEPARTMENT

HYPERACTIVE SOFTWARE, A MINNEAPOLIS DEVELOPER OF HYPERCARD APPLICATIONS

QUIPS & QUOTES

He votes "no" on groupware

"Creative ideas do not spring from groups. They spring from individuals. The divine spark leaps from the finger of God to the finger of Adam, whether it takes ultimate shape in a law of physics or a law of the land, a poem or a policy, a sonata or a mechanical computer."

A. Whitney Griswold (1957, then president of Yale University)

Scratch one T1 line

"Our inventions are wont to be pretty toys, which distract our attention from serious things. We are in great haste to construct a magnetic telegraph from Maine to Texas; but Maine and Texas, it may be, have nothing important to communicate."

Henry David Thoreau (1854)

Better dead than high-tech

"The American stake in literacy as a technology or uniformity applied to every level of education, government, industry and social life is totally threatened by the electric technology. The threat of Stalin or Hitler was external. The electric technology is within the gates, and we are numb, deaf, blind and mute about its encounter with the Gutenberg technology, on and through which the American way of life was formed."

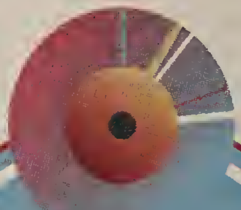
Marshall McLuhan (1964, Canadian educator)

?

Do you have anecdotes about your users, your boss or your job? Know any industry trivia? If so, please contact Lory Zottola or Jodie Naze at 1-800-343-6474. If we use your ideas, we'll send you a gift.

Sting operation

Two Texas A&M University scientists are formulating a computer-aided map depicting the U.S. migration of the Africanized honeybee (popularly known as the "killer bee").



1990's Top 10 best-selling CD-ROM disks

1. Microsoft Bookshelf (Microsoft)
2. Grolier Encyclopedia (Grolier Electronic Publishing)
3. Microsoft Programmer's Library (Microsoft)
4. PC-SIG Library (PC-SIG Spectra Publishing)
5. Computer Library (Ziff-Davis Communications)
6. Science and Technical Reference (McGraw-Hill)
7. Compton's Encyclopedia (Brittanica Software)
8. U.S. History on CD-ROM (Bureau Development)
9. CIA World Fact Book (Quanta Press)
10. World Atlas (Software Toolworks)

Sources: Bureau of Electronic Publishing, Inc.; Special thanks to The Computer Museum, Boston

INSIDE LINES

Programming in the visual age

▶ Sources close to Microsoft said programmers at the Redmond, Wash., software giant's headquarters may soon be "drawing" applications using a new code generator, dubbed "Visual Basic." The loosely kept secret about Visual Basic, which is expected to debut shortly, has been bubbling up around the Silicon Valley in recent weeks. "People will be pleasantly surprised to see how powerful it is and how easy it is to use," one source close to the billion-dollar software firm said.

The Ugly American . . . recruiter

▶ Here today, gone tomorrow. A certain Swiss IS manager reported that an American headhunter systematically ran through the roster of his department, offering employees 40% to 50% more if they jumped ship to a U.S. company setting up shop in Switzerland. However, the headhunters' targets were gun-shy because of American companies' hire-and-fire mentality, our source said. Swiss IS managers, who tend to stay six to eight years in one job, did not want to find themselves out of a job or transferred to Singapore in two years.

Just don't call it 'Quaylewhacker'

▶ Hewlett-Packard may have the fastest workstations around at 76 million instructions per second (MIPS), but the company still doesn't have an entry-level RISC system. That should be remedied this fall with a workstation code-named "Bushwhacker."

Which brings us to . . .

▶ President Bush may have woken up to the Electronic Age with his new PC [CW, April 29], but the electronic voter has not warmed up to his lieutenant. A poll last Monday on Prodigy attracted more than 15,500 responses, only 16% of which were from people who said they were "very confident" of Vice President J. Danforth Quayle's qualifications for the presidency. Twenty-one percent were fairly confident; 20% were not very confident. They posted a mandate of 55% in favor of Bush selecting a new running mate for 1992.

Don't tell us!

▶ While acknowledging rumors of impending employee layoffs and pay cuts circulating within the walls at Dun & Bradstreet Software, a spokeswoman for the company emphatically stated earlier this week that there have been no discussions to that end. Several internal sources have speculated that the software giant would be laying off staff at both the Framingham, Mass., and Atlanta offices in June.

Tossing the chips

▶ Playing cleanup, Motorola will have its next RISC chip out by year's end. The 8810 will run between 58 and 84 MIPS, three times the speed of the current chip. Motorola has announced that its next chip, available sometime next year, will run between 50 and 150 MIPS. LSI Logic, which is a maker of Sun's architecture, said it would have a chip that runs up to 80 MIPS this year, and HP's recent 700 series runs 57 to 76 MIPS.

How you say, better be good?

▶ Zenith Data Systems' market presence has suffered since its takeover by Groupe Bull, but at Comdex Spring '91, Zenith will come out with five new portables, which will include an Intel 80386SL-based model and some new high-powered desktop servers, including one running an I486SX. A source close to Zenith said this is its biggest product announcement since 1988, when it came out with the first battery-operated 286 and 386 portables. Analysts said it had better be good, or Zenith may be in as much trouble as its parent.

You can take it to the bank, and maybe you should! An open letter from the suddenly compatible AT&T and NCR managements appeared Friday as a full page ad in daily newspapers assuring customers that "you can buy either AT&T's or NCR's products — right now, or in the future — with confidence." Cynics wonder just how many are willing to belly up to the 3B bar these days. As always, we'll follow this merger closely and depend on our readers to be our eyes. Contact News Editor Pete Bartolik at (800) 343-6474, fax your stuff to (508) 875-8931, or hook up with us on Compuserve at 76537,2413.

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